ADVENTURE HARDWARE GROUP DATA VISUALIZATION & FORECASTING PRESENTED BY OLUSEYE OYENIRAN

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AHG

Overview of the Business

AHG

Adventure Hardware Group is a global manufacturing organization with operation in America, Europe and Asia.AHG operates both online retailer and reseller of road bikes, mountain bikes touring bikes, components, accessories and clothing. We have personalized retail services on local shops and interactive experience of our online services on the internet specifically designed to make you knowledgeable and have confidence on every product we sell.

4 years in Business

10 Regions

2 Channels (Online & Reseller)

3 types of bikes

35 Sub-category

19,119 Customers

Executive Summary

- Across the globe, AGH sales have grown 101% since the end of 2011 to 2013 (62% Online and 119% Reseller). And overall net profit of 9% across all the sales region, with sales volume of 275,000.
- There is **a clear shift**, between **May 2013 and July 2013**, the number of Online transactions increased exponentially by **370%.**
- This change is explained by the introduction of the product categories "Accessories and Clothing" that have led to an exponential increase in transactions sales. Additionally, in a lower proportion as of November 2013, a change in the bicycle market is seen, surpassing online sales to resellers.
- Both online and reseller **Bike Market** represents 86% of the sales. It is distributed by the following channels:

Online: It represents 26% of sales, however the **Profit is positive for 118%** of total sales. There is no product over these years sold with negative margins.

Reseller: It represents 60% of sales, however the **Profit is negative for 34%** of total sales. The average Profit has been a loss of 216$ per transactions. List Price > Unit Price --Average Reduction List Price = 43%.

- **Australia is** the region with the highest **online sales** since 2011 with a total of 36% of total online sales and **Southwest in US** is the region with the highest sales **reseller since** 2011 with a total of 23% of the online sales.
- Highlight the category of **E-Bike**. According to The Persistence Market Research report; "By the end of 2016, hybrid bicycles are anticipated to be the leading segment of the market and is expected to account for over 38% share of the market in terms of value, followed by the road and mountain segments. The e-bike segment is foreseen to reflect a compound annual growth rate of 4%, to reach a market valuation of US$ 24.43 Billion by 2024."

Executive Summary

5 year forecasts predict:

In the second quarter of 2014 , the sales is projected to rise to **146%** an increment of **46%** over the observed sales and we have projection of **$34,343** for the **2** quarter of 2019

•Market Basket Analysis:

The products that must be sold together based on profitability are the following:

Helmets and tire and tubes. It could increase revenue by **17**%

3

Financial Demography And performance

AHG

1 Financial information Summary

2 is there a shift towards digital?

3 is the business profitable?

4 Customer demographics

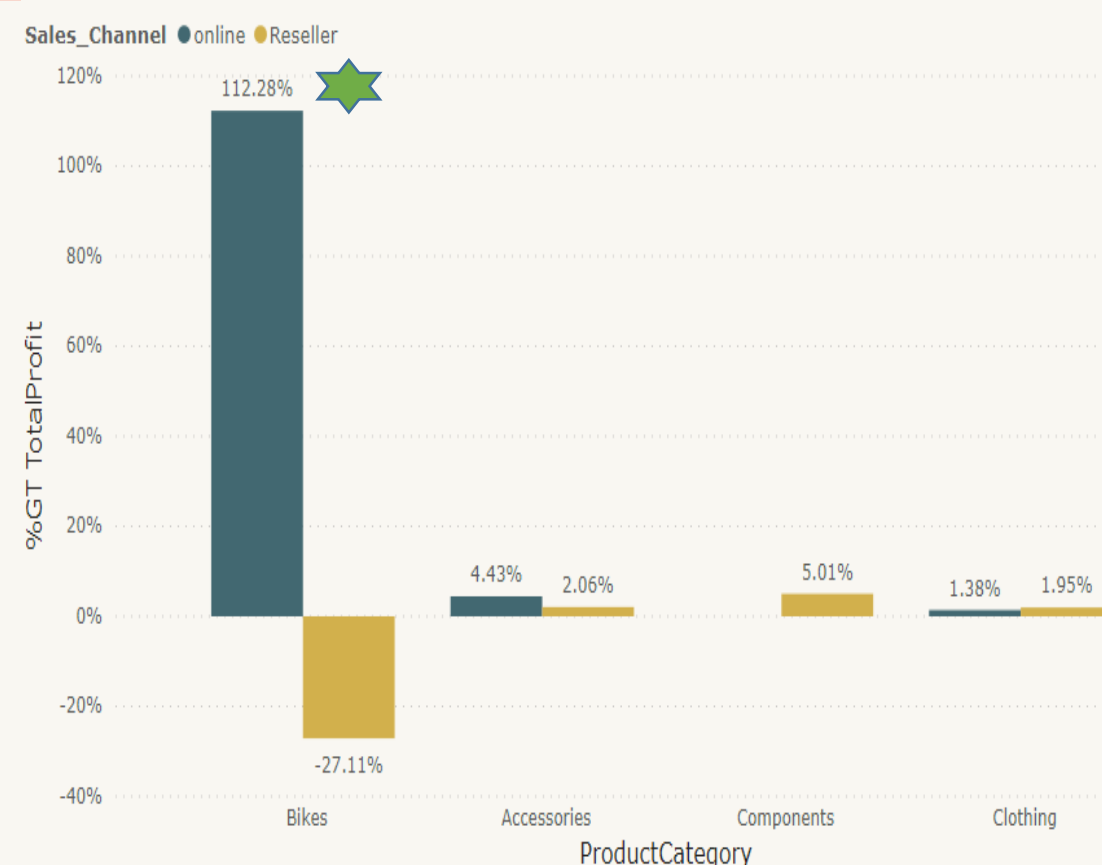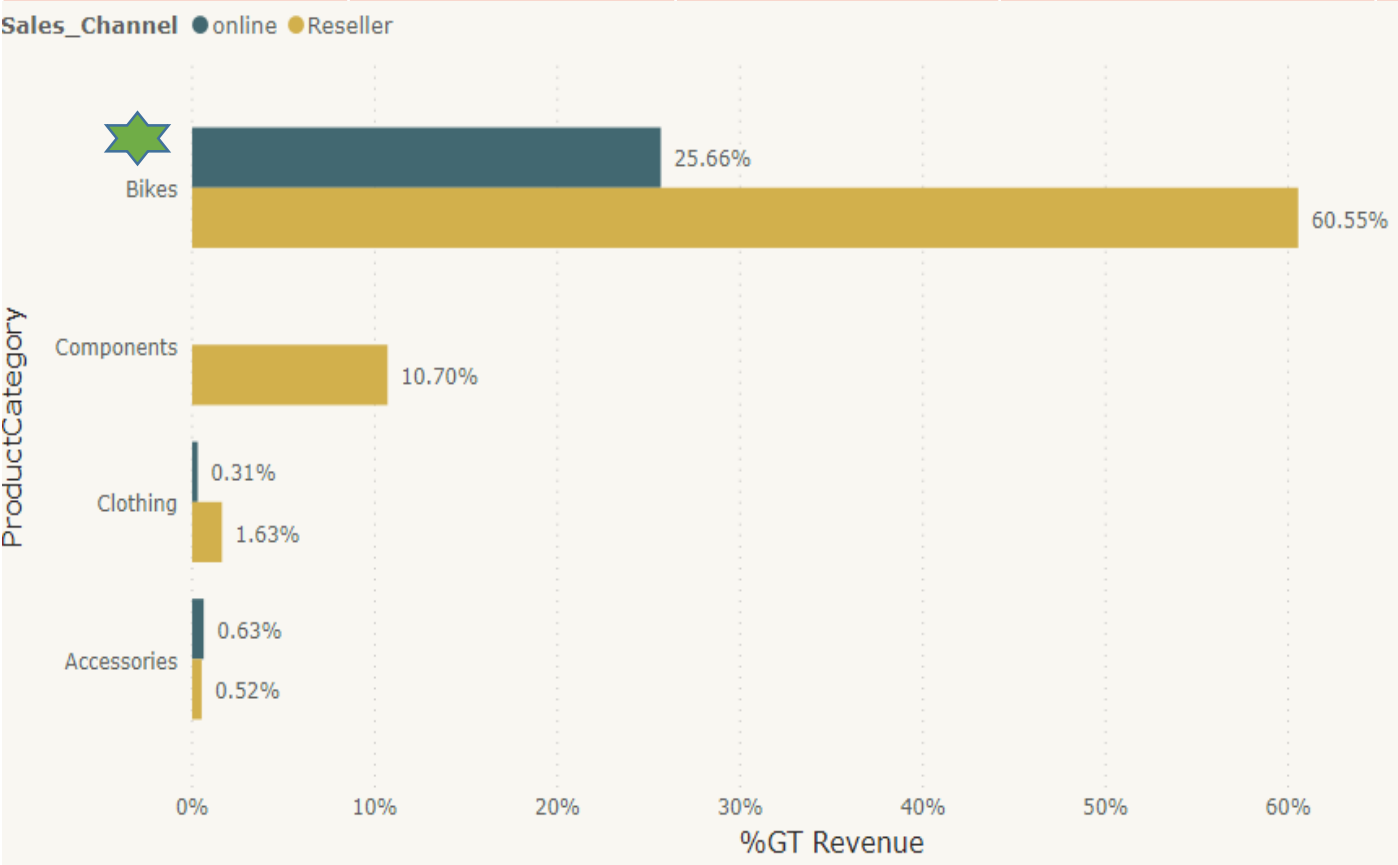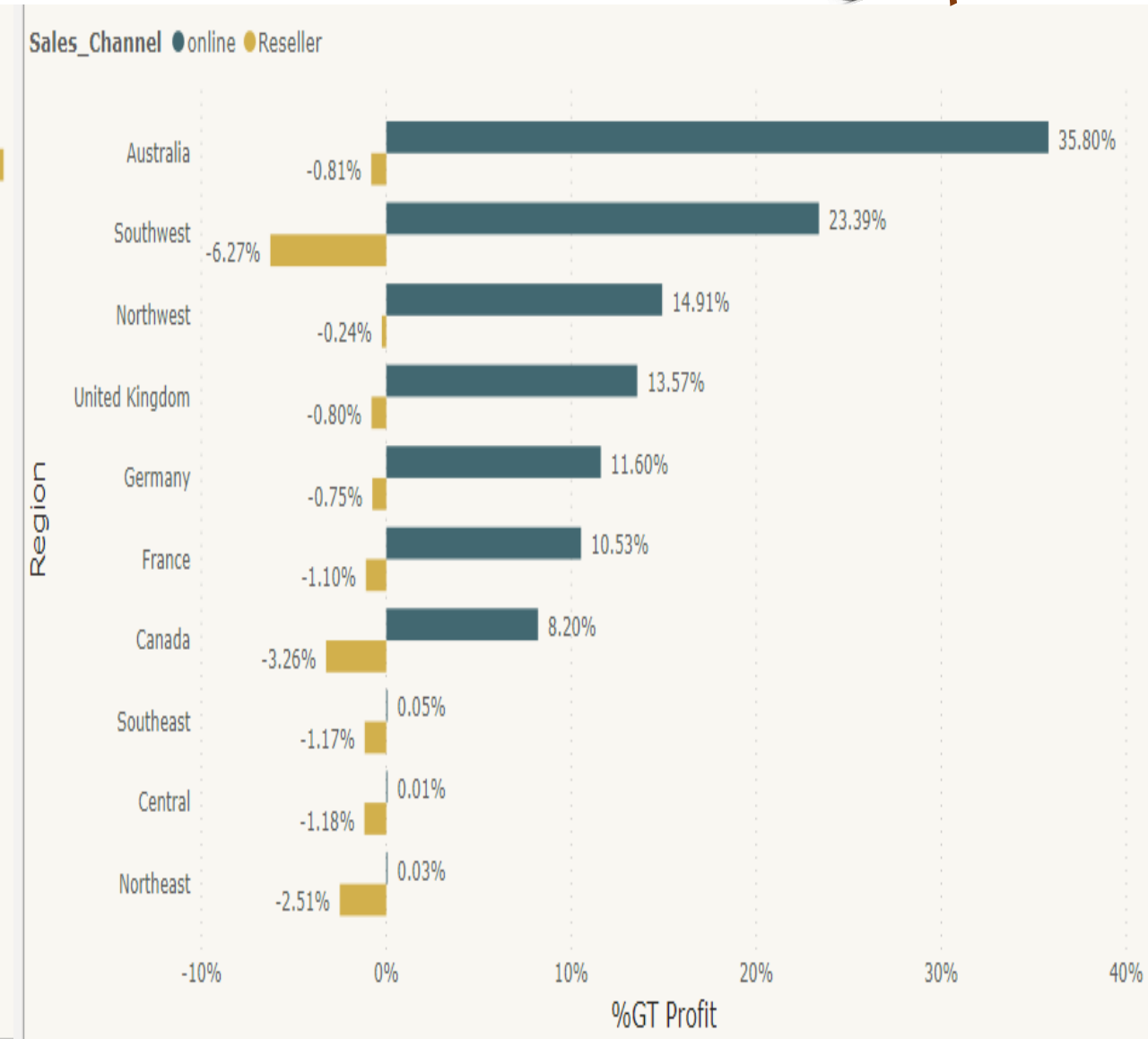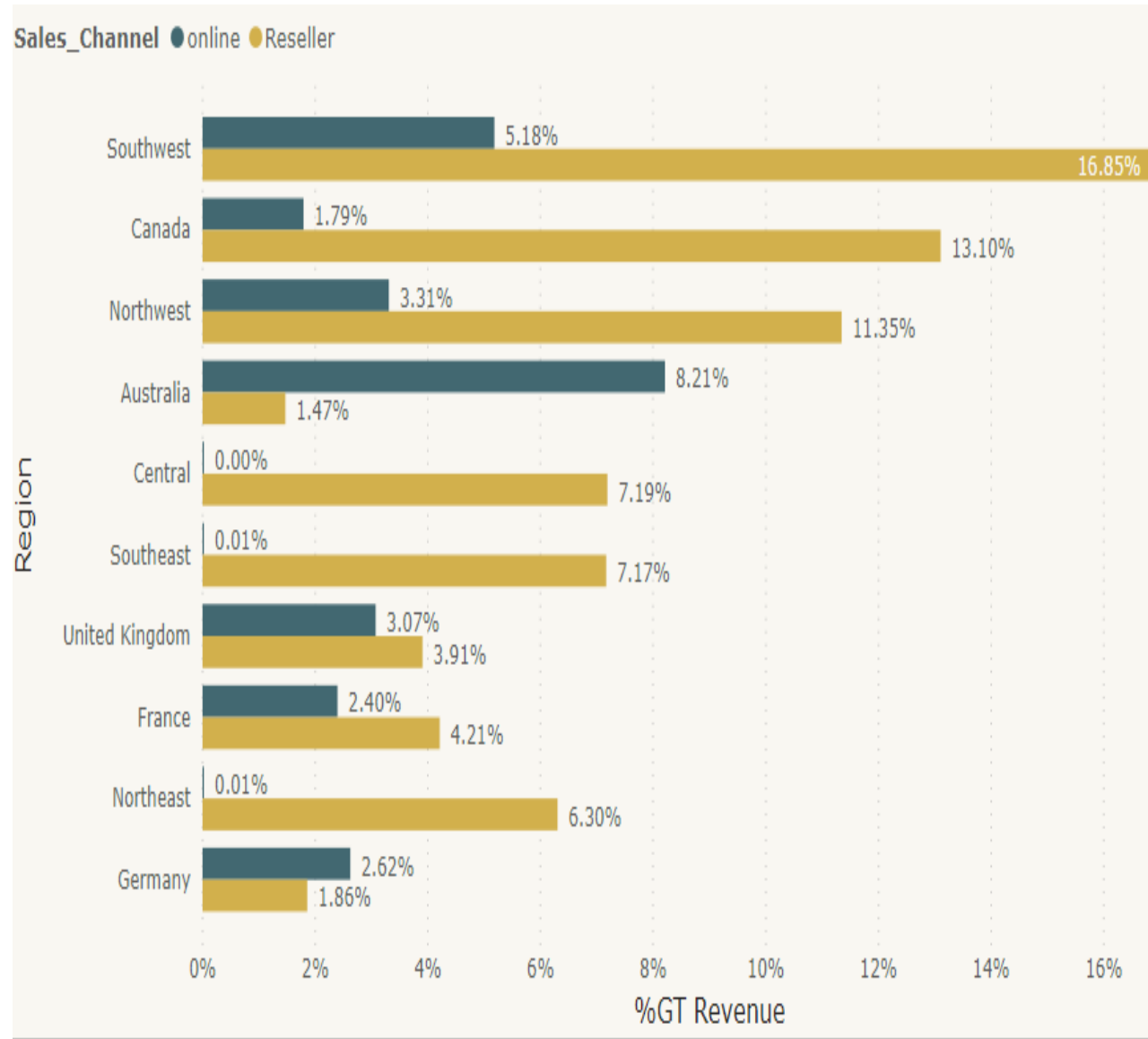**5** AHG Areas that need improvement

AHG

Channels	Revenue	Profit	%Revenue	%Profit	TotalTXN
Reseller	$81,01M	-$ 1.8M	73.4%	-18.1%	3,806
Online	$29.4m	11.7M	26.6%	118.1%	27,659
Total	$110.4	$9.9M	100%	100%	31,465

• **Reseller:** It represents **73%** of sales, however the Profit is negative **- 18 %.**
• **Online:** It represents **27%** of sales, however the Profit is positive **+118 %.**
• **Bikes Category:** It represents **86%** of the sales, however the Online bike Market is the only one that record significant profit of **+112%**

Left chart — %GT Revenue by Region and Sales_Channel (online, Reseller)

Region	online	Reseller
Southwest	5.18%	16.85%
Canada	1.79%	13.10%
Northwest	3.31%	11.35%
Australia	8.21%	1.47%
Central	0.00%	7.19%
Southeast	0.01%	7.17%
United Kingdom	3.07%	3.91%
France	2.40%	4.21%
Northeast	0.01%	6.30%
Germany	2.62%	1.86%

Right chart — %GT Profit by Region and Sales_Channel (online, Reseller)

Region	online	Reseller
Australia	35.80%	-0.81%
Southwest	23.39%	-6.27%
Northwest	14.91%	-0.24%
United Kingdom	13.57%	-0.80%
Germany	11.60%	-0.75%
France	10.53%	-1.10%
Canada	8.20%	-3.26%
Southeast	0.05%	-1.17%
Central	0.01%	-1.18%
Northeast	0.03%	-2.51%

•**Regions: Online** Market -Australia represent just 8% of total sales but it is the most profitable region with **36%** of the total profit.
Reseller Market -The US and Canada have the largest sales by difference (84% of total Sales). Overall there is no profit in Reseller Market.

1   Financial information Summary

2   **is there a shift towards digital?**

3   is the business profitable?

4   Customer Demographics

5   AHG Areas that need improvement

YES!

Global bicycle market share, by product, 2017 (%)

- Mountain Bicycle
- Hybrid Bicycle
- Road Bicycle
- Others
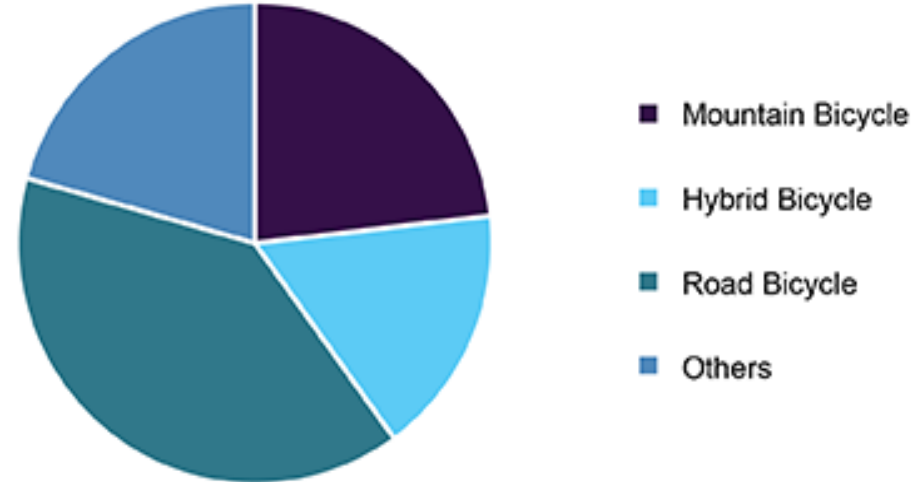
Source: www.grandviewresearch.com

Key factors that are driving the bicycle market growth globally for both online and reseller include adoption of cycles as a form leisure activities and a high preference for bicycles as continuous form of exercise to ensure a health living. It has a market size values of **$55.72 billion** for the year 2020 and a Revenue forecast of **$75. 47 billion in 2025**

Bicycle Statistics 2019
How Many Bikes Are There in the World?

Country	Bikes
CHINA	450,000,000
USA	100,000,000
JAPAN	72,540,000
GERMANY	62,000,000
BRAZIL	40,000,000
INDIA	30,800,000
ITALY	23,000,000
INDONESIA	22,300,000
UK	20,000,000
FRANCE	20,000,000
NETHERLANDS	16,500,000

HOW MANY BIKES ARE IN THE WORLD?
1B+

China is massively holding the first position. China, India, EU, Taiwan, and Japan are responsible for 87% of global production.
364,000 bicycles are produced daily. That's 15,000 per hour, or 253 a minute, or 4 bikes a second.
47 670 bikes are being sold daily. Yes, every two seconds, someone will buy a bike

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- Store (44%)
- Online 23%
- Specialized store (18%)

- Store (44%)
- Online (29%)
- Specialized store (15%)

- Store (40%)
- Online(21%)
- Specialized store (34%)

- Store (22%)
- Online (21%)
- Specialized (19%)

- Store (38%)
- Online (21%)
- Specialized store (39%)

- Store (31%)
- Online 21%
- Specialized store (35%)

- In 2019 the Bike Online market represented a 26% whilst in 2020 it increased **45%**.
- In 2020 there was a total increase of **89%** of the Bike Online market. This is due to effect of Covid 19 pandemic where almost everyone has resulted to shopping online.
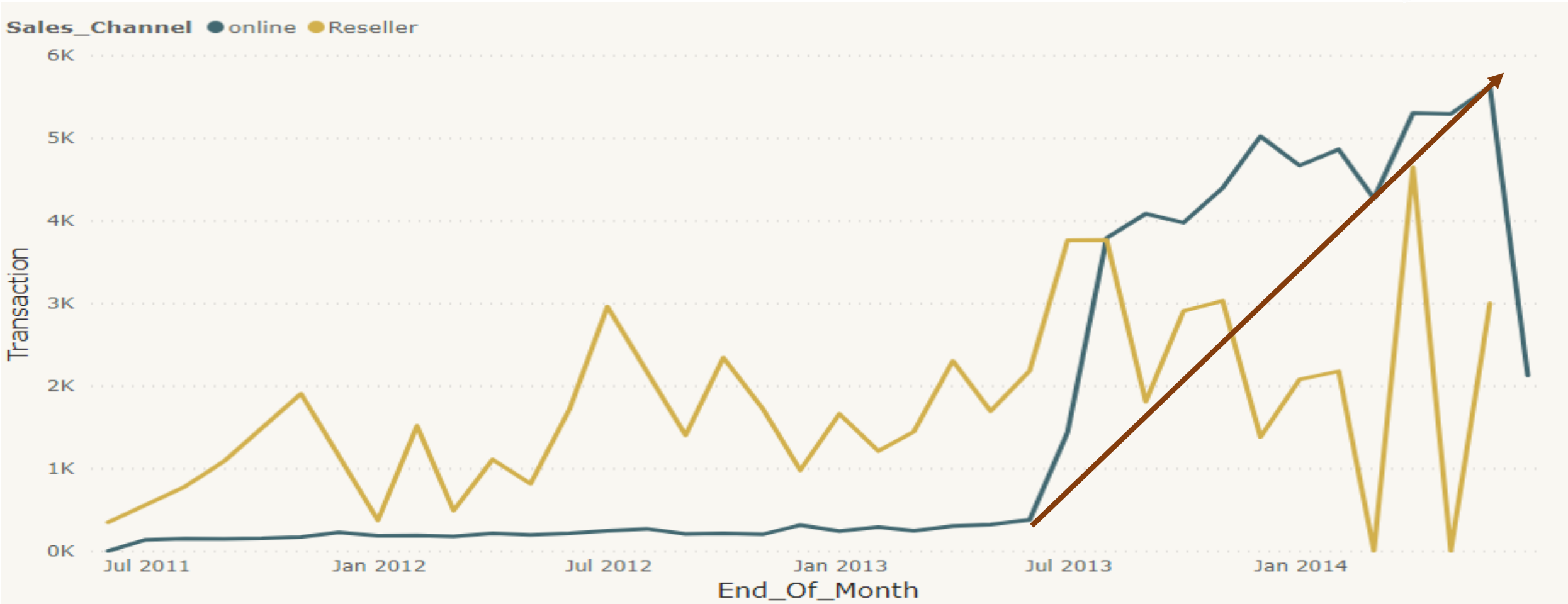
Comments

•There is a clear shift ,a sharp increase in the number of online transactions from the end of May 2013 over the period of 1 year reaching its peak in May 2014 – at about **1,468 %** increase

What is the driving the Shift? By Regions:
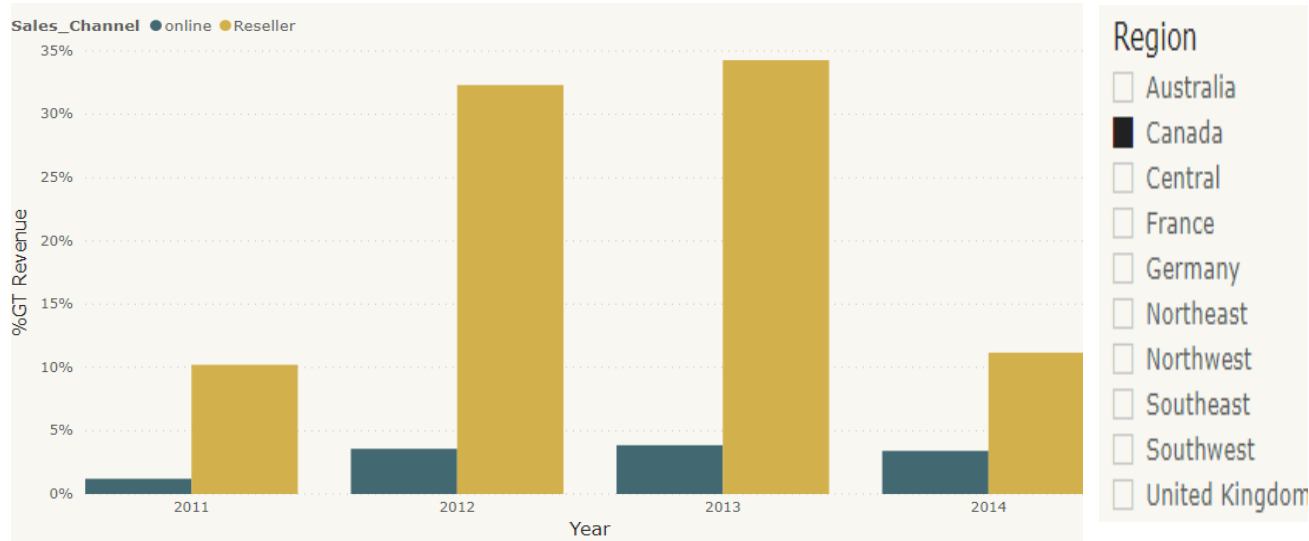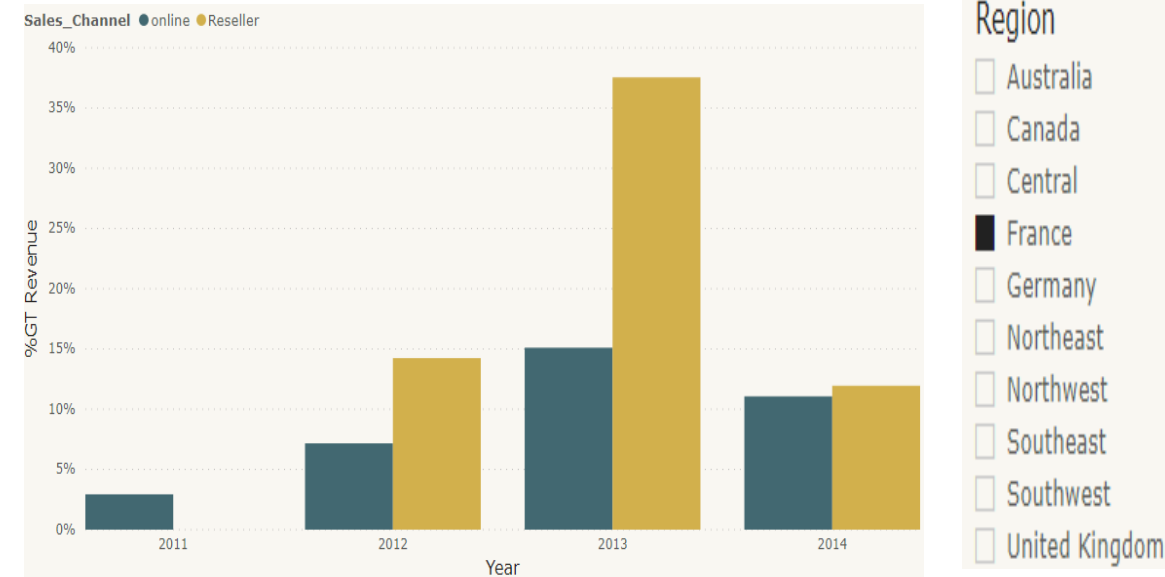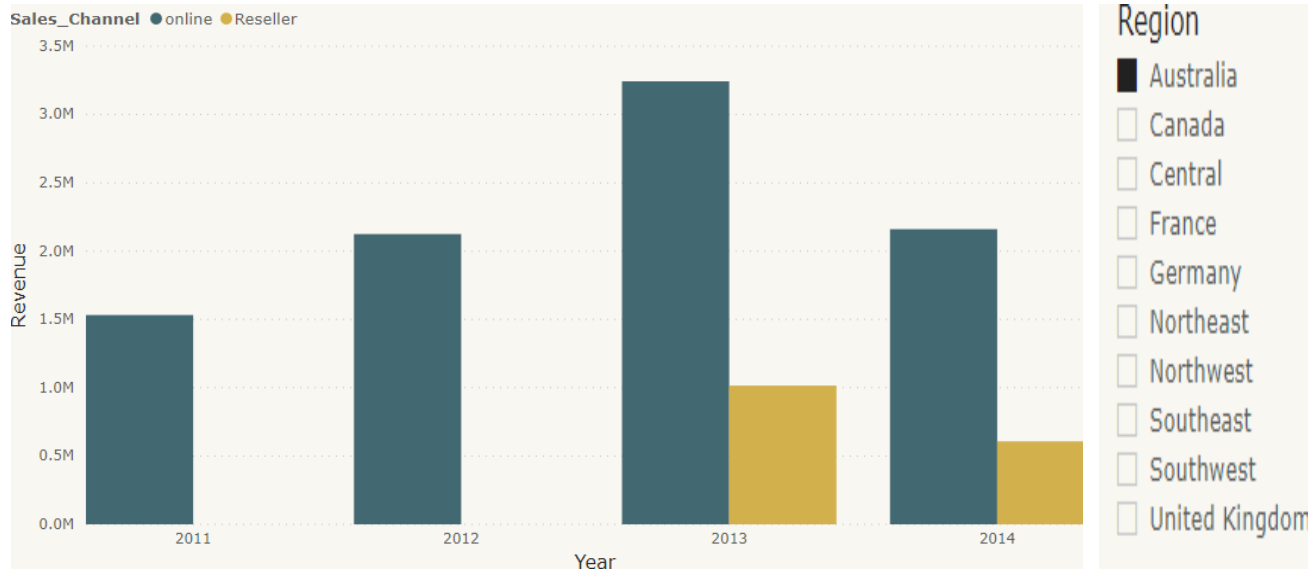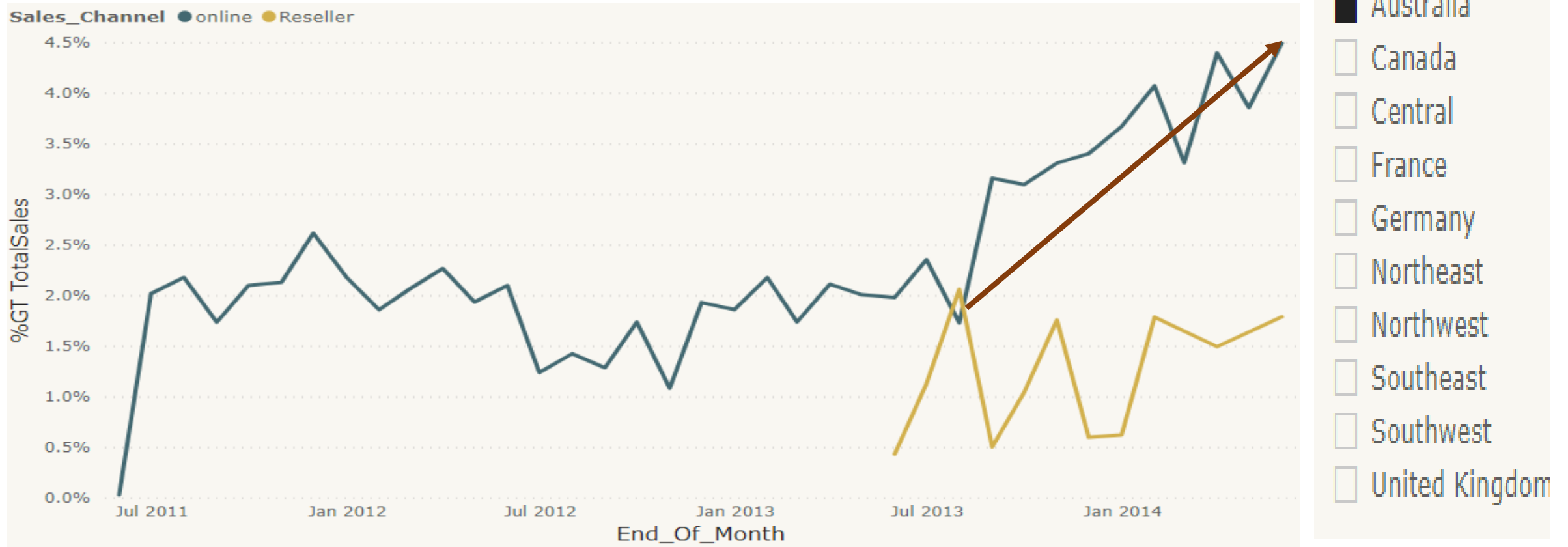

Comments
- In Australia, clearly 2014, is not a very good exercise for AHG's sales but the Online market behaved better than the Reseller.
- The only region with a visible shift towards digital sales is Australia having total sales of over **3 million dollars** which represent 30.4% in 2013

What is the driving the Shift? By Regions:

Region
- ■ Australia
- ☐ Canada
- ☐ Central
- ☐ France
- ☐ Germany
- ☐ Northeast
- ☐ Northwest
- ☐ Southeast
- ☐ Southwest
- ☐ United Kingdom

- To further strengthen our assertions that, there is a shift towards digital in Australia region, we can clearly see that there is an upward trend in online sales from July 2013 totaling 43% by the end of May 2014.

1   **Financial information Summary**

2   **is there a shift towards digital?**

3   **is the business profitable?**

4   **Customer Demographics**

5   **AHG Areas that need improvement**

is the business profitable?

AHG

Not as much as expected!

RESELLER BIKES

ONLINE & RESELLER Accessories, Clothing & Components

ONLINE BIKES

PROFIT -0%
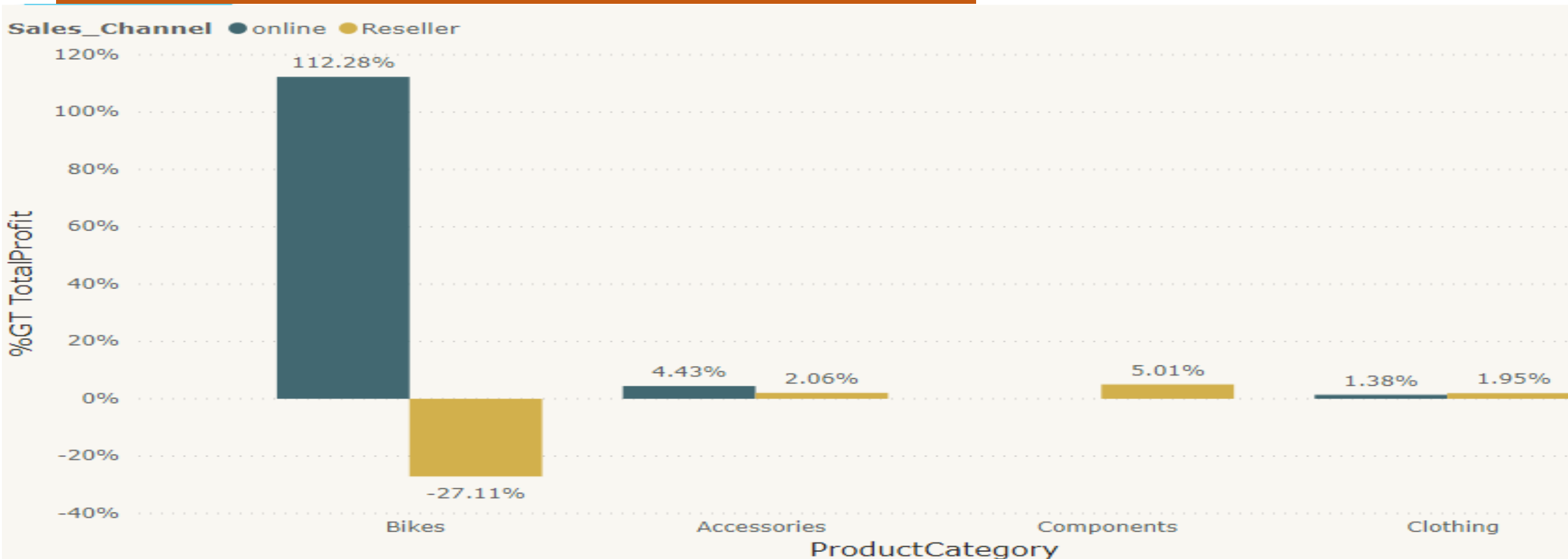
PROFIT 0% -6%

PROFIT + 6%
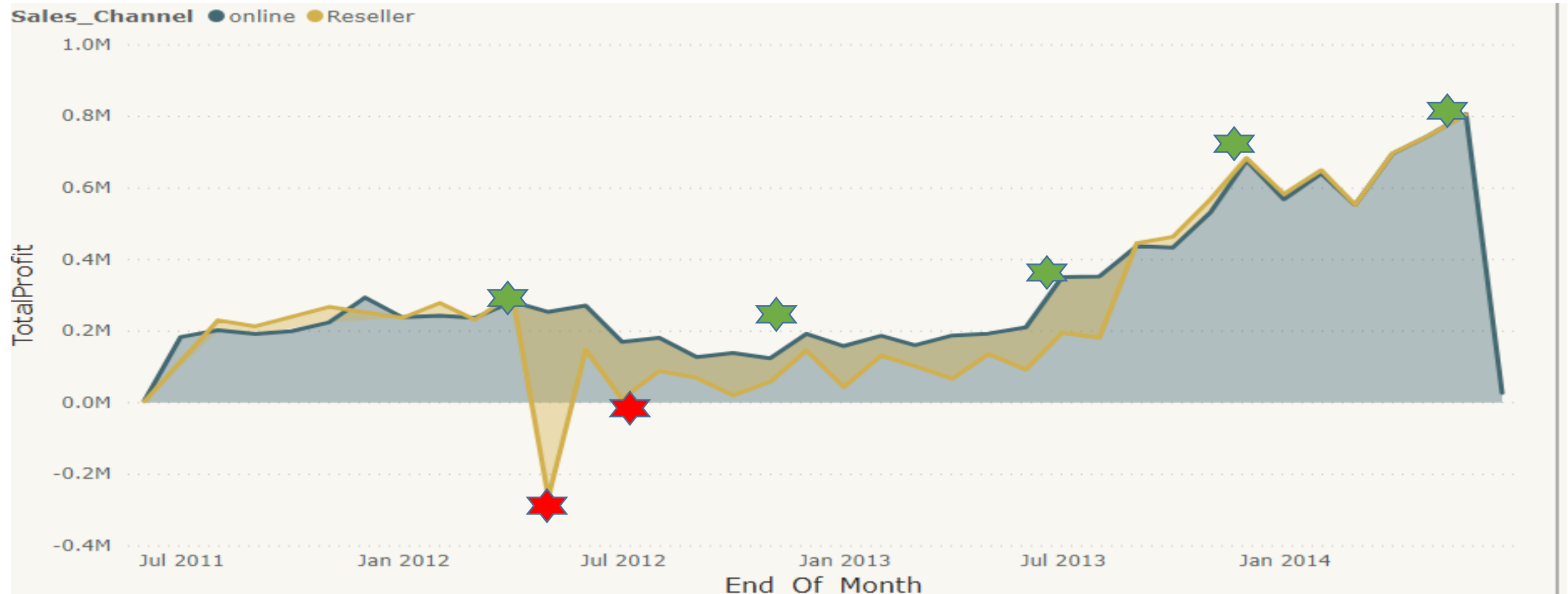
- Online: There is a steady increase in profit having positive value of **$183k** in June 2011 reaching its peak value of **$807k** in May 2014.
- Reseller: Monthly profit has been mostly NEGATIVE or nearly break-even.
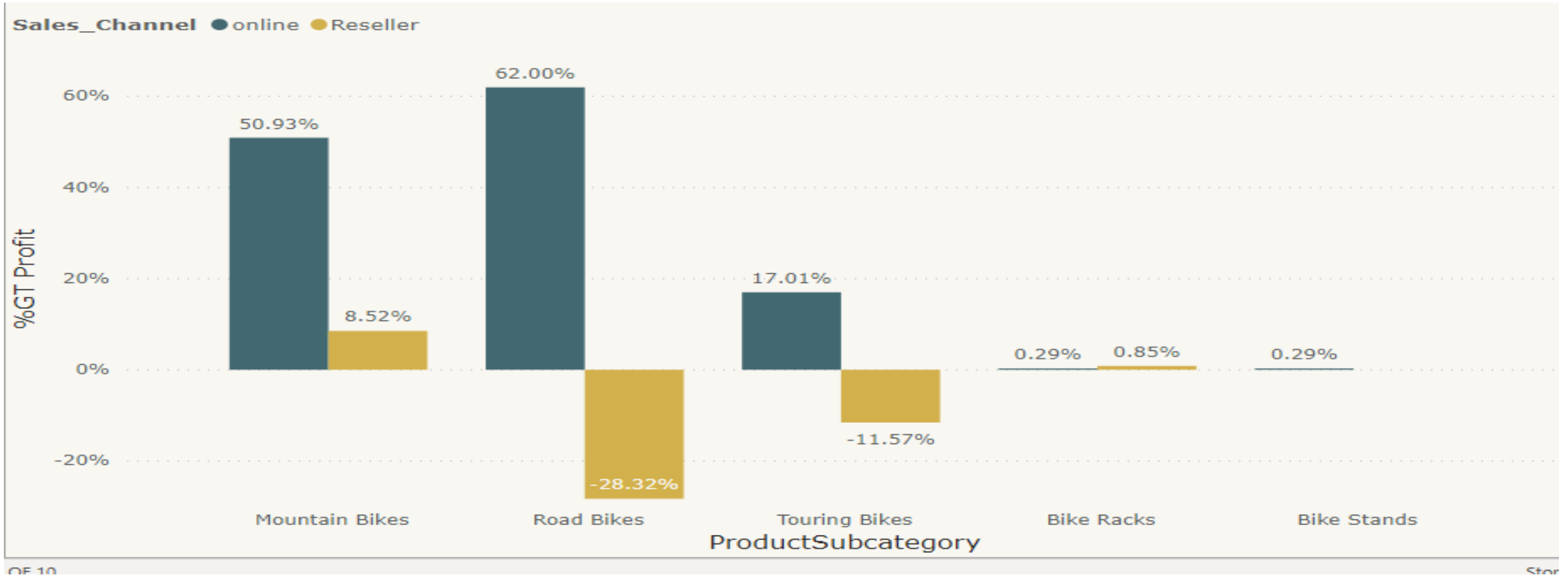
Which Product Category is driving profit?

- Online Bikes is the most profitable Product Category contributing **112%** in the total aggregate profits
- Components, Accessories and Clothing contributed just **15%** of the total profit
- Reseller Bikes produced a loss of **27%**

Which Product Sub-category is driving profit?

- Online channel of Road Bikes, Mountain Bikes and Touring Bike are the major driver of Profit in AHG sales contributing **62%,51% and 17%** of the total profit respectively .
- Bike Racks and Bike stands contributed insignificantly to the total profit, less than **1%**
- Reseller Road Bikes and Touring Bike both produce a loss of40**%,however** Mountain Bikes made a meagre profit of **9%** in Reseller

AHG

Channels	Product category	below list price($)
Reseller	Bikes	16.2M
Reseller	Components	3.4M
Online	Bikes	0.5 M
Reseller	clothing	0.2M
Reseller	Accessories	0.1m
Online	Accessories	0.0
Online	Clothing	0.0
		20.5M
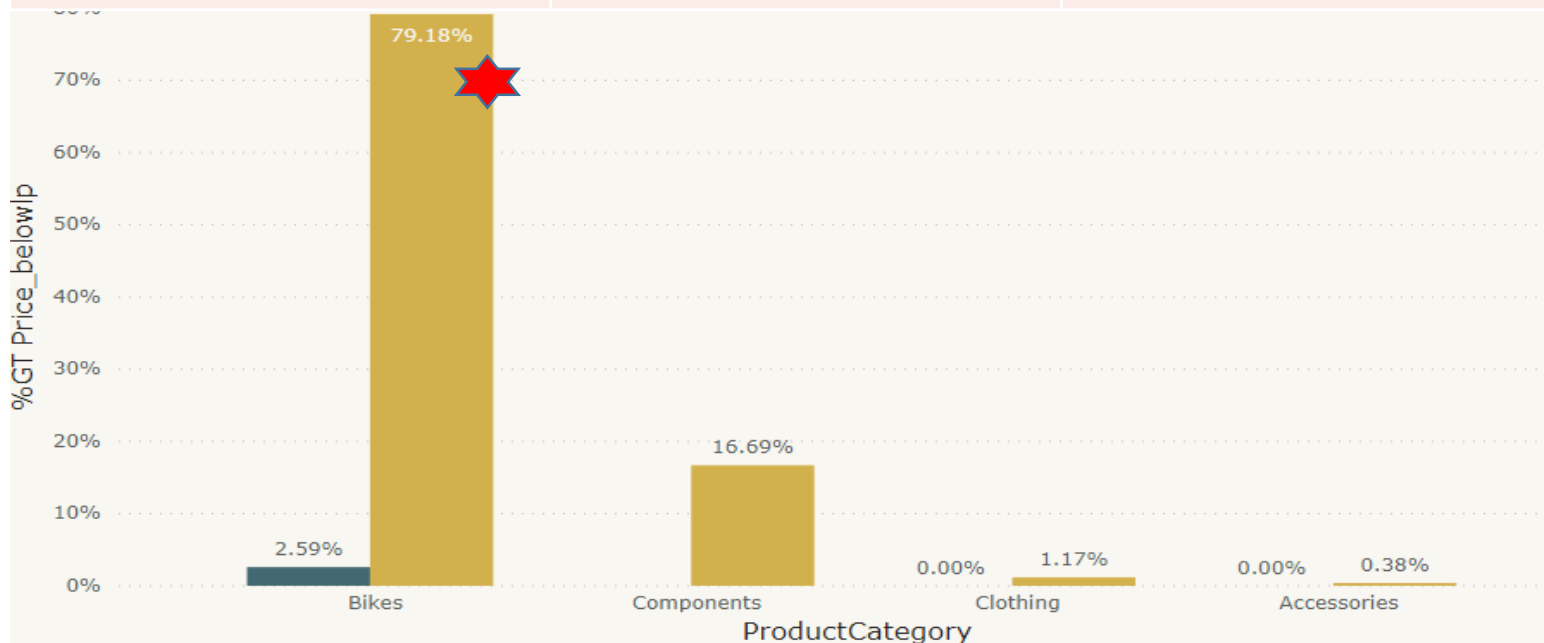
- Revenue were lost due to selling below the list price

- Over **20 million** dollars were lost due to selling below list price, **Bike** categories were badly affected with **82%** of the total money lost.

- Reseller bike represent **79%** while the online bike is just **3%**

Financial Demographics And Performance

AHG

1 Financial information Summary

2 is there a shift towards digital?

3 is the business profitable?

4 **Customer Demographics**
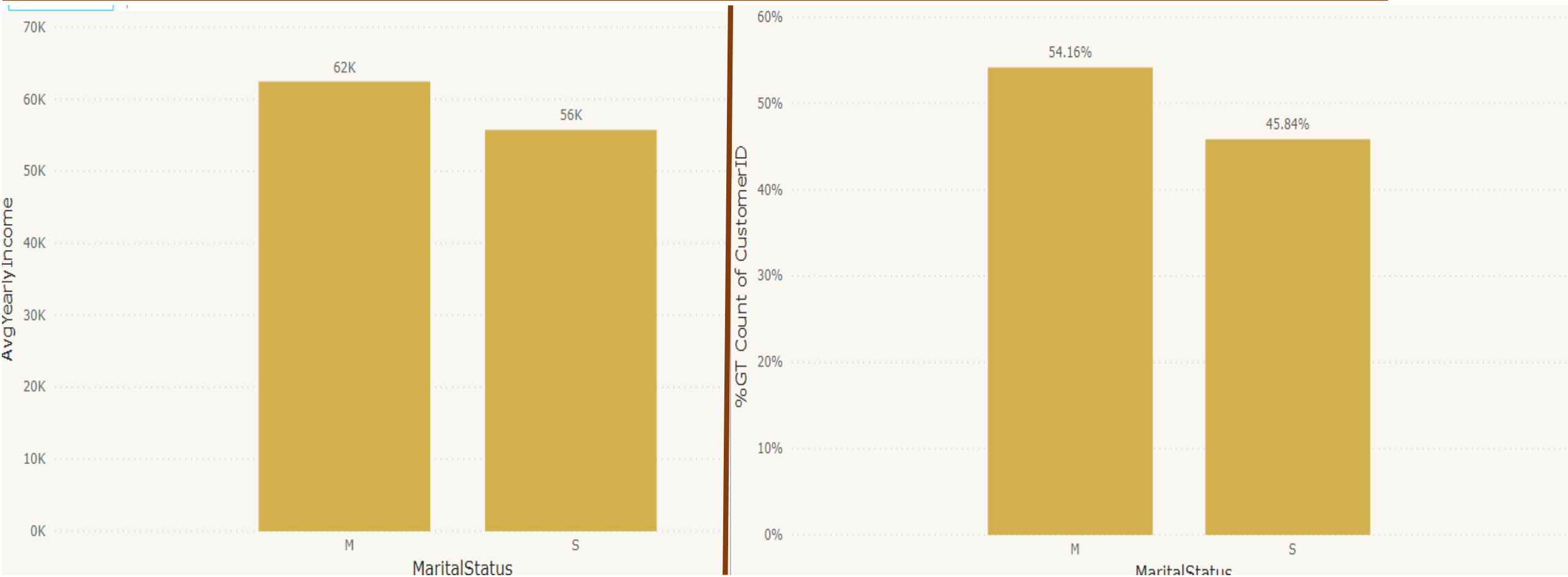
5 AHG Areas that need improvement

What are important of customer Demographics?

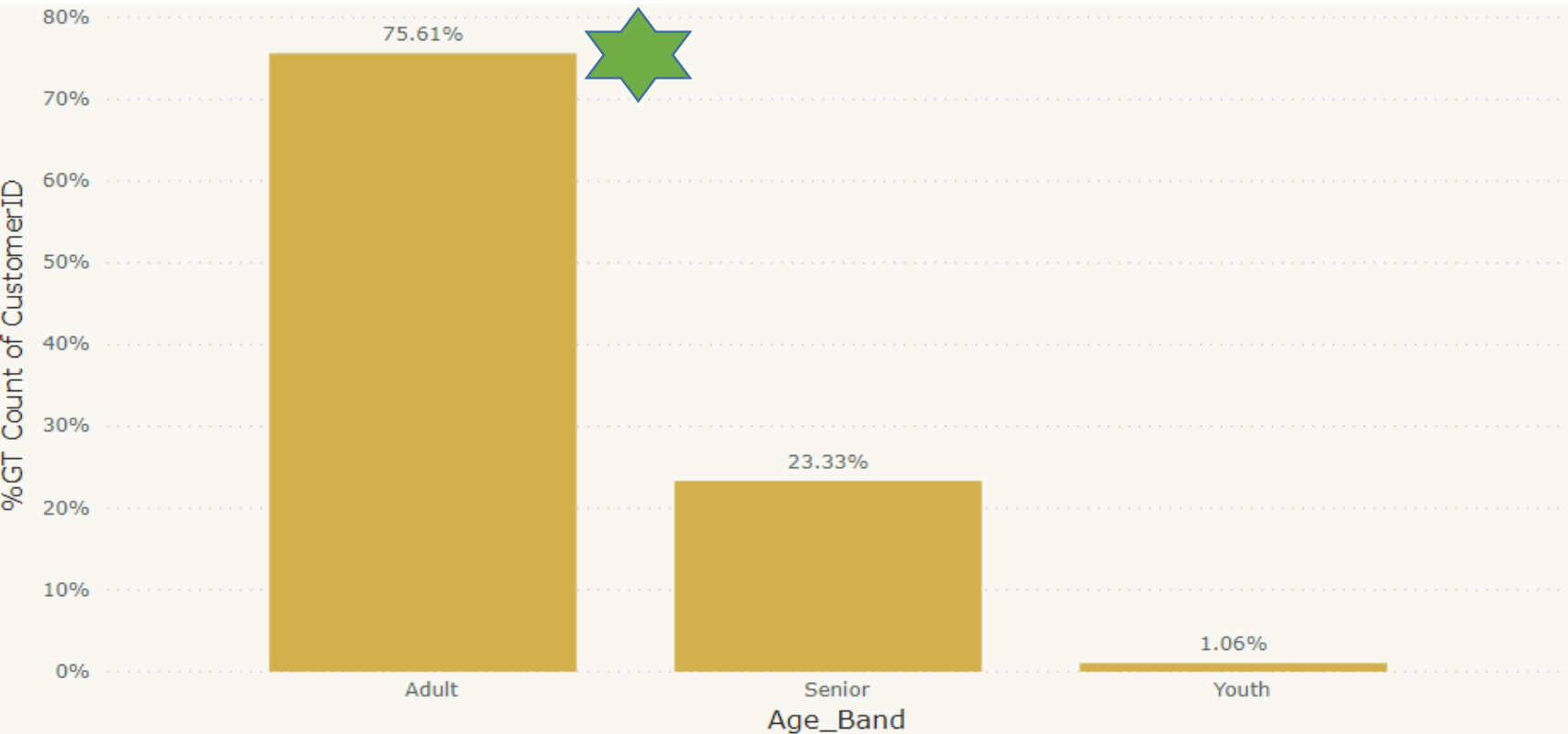## What are important of customer Demographics?:Marita Status

:**54%** of our custormers who are **married** earn an average annual income of **$62K,**while **46%** of the **single** counterparts earn an average of **$56k yearly**

What are important of customer Demographics?: Age Band

Key

Age Band	Type
• 20-35	Youth
• 36-60	Adult
• 61 & above	Senior

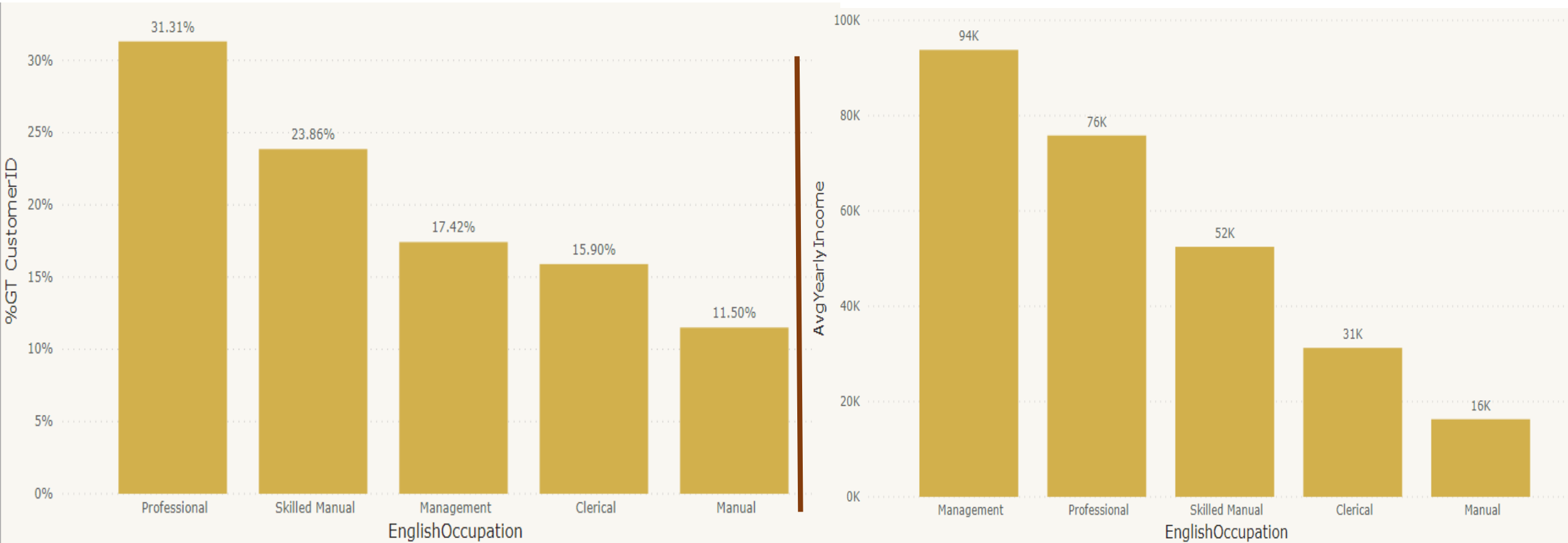*comment*: Most of our customers are adults within the age range **of 36 to 60 years** which represent **76%** of the total numbers of customers in AHG

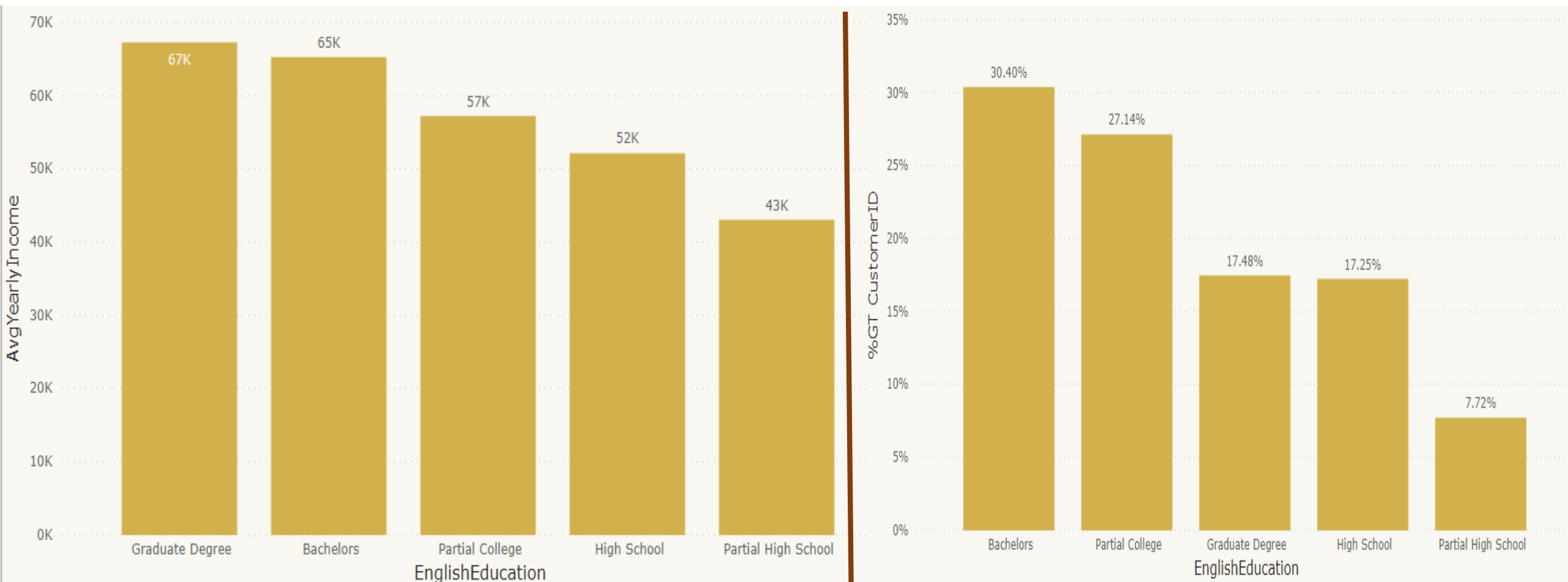# What are important of customer Demographics?: Occupation

: The management cadre of our customers earn an average of **$94k** in a year which represents **17%** of the total numbers of our customers while the manual worker that represent **12%** of the workers in AHG received **$16k** annually

## What are important of customer Demographics?: Education

The highest academic qualification of our customers is **graduate degree** which represents **17%** of the total numbers of customers. They also earn highest average yearly income of **$67k while 8% of the customers hold partial high school with $43k annual salary**

What are important of customer Demographics?: Age & Revenue
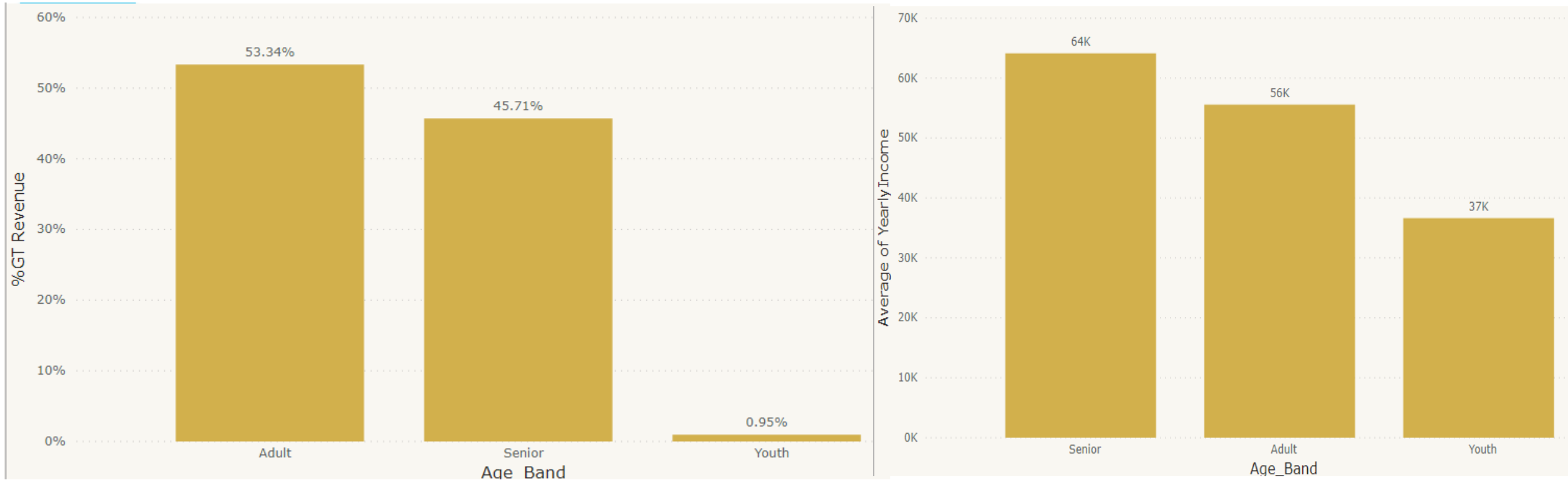
Key

Age	Type
• 20-35	Youth
• 36-60	Adult
• 61 & above	Senior

Adults who earn $56k Yearly are the most active of the AHG group customers' base contributing 53% of the total revenue

Financial Demographics And Performance

3

AHG

1. Financial information Summary
2. is there a shift towards digital?
3. is the business profitable?
4. Customer Demographics
5. **AHG Areas that need improvement**

Manufacturing

- ❑ **10651** product failed inspection out of these 13% of product named fork end

- ❑ The average of scrap work orders are 2.6%. Above the sector –Reduce % at least "2%".

- ❑ Scrapping Reason; "Seat assembly not as ordered and Drill size too large" should review why is above the average.

- ❑ % Scrap by Product: 10 Top Product should be review why is above the average.

- ❑ Actual Cost = Planned Cost and this remained unchanged AHG should review the manufacturing processes for possible Risk of Fraud.
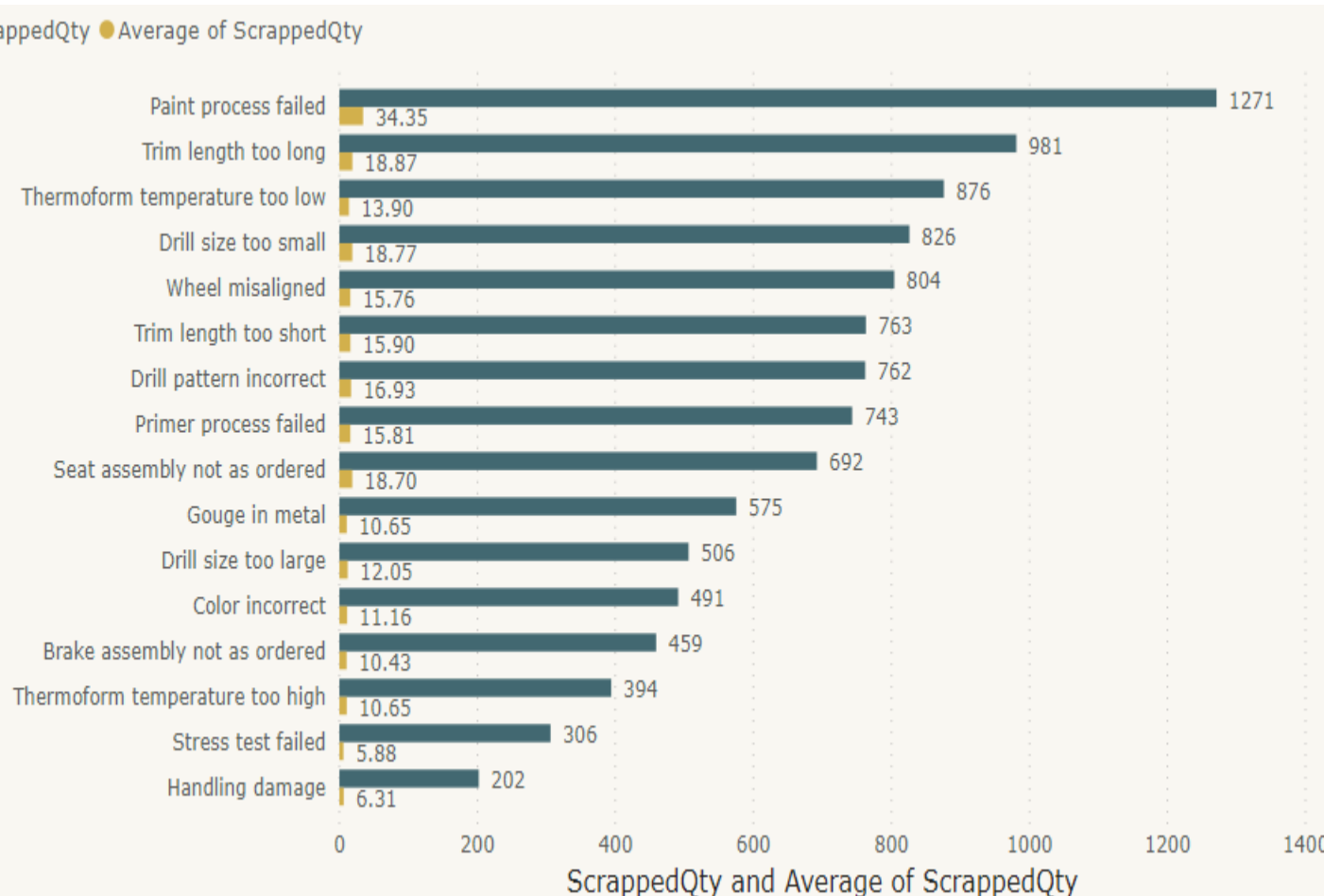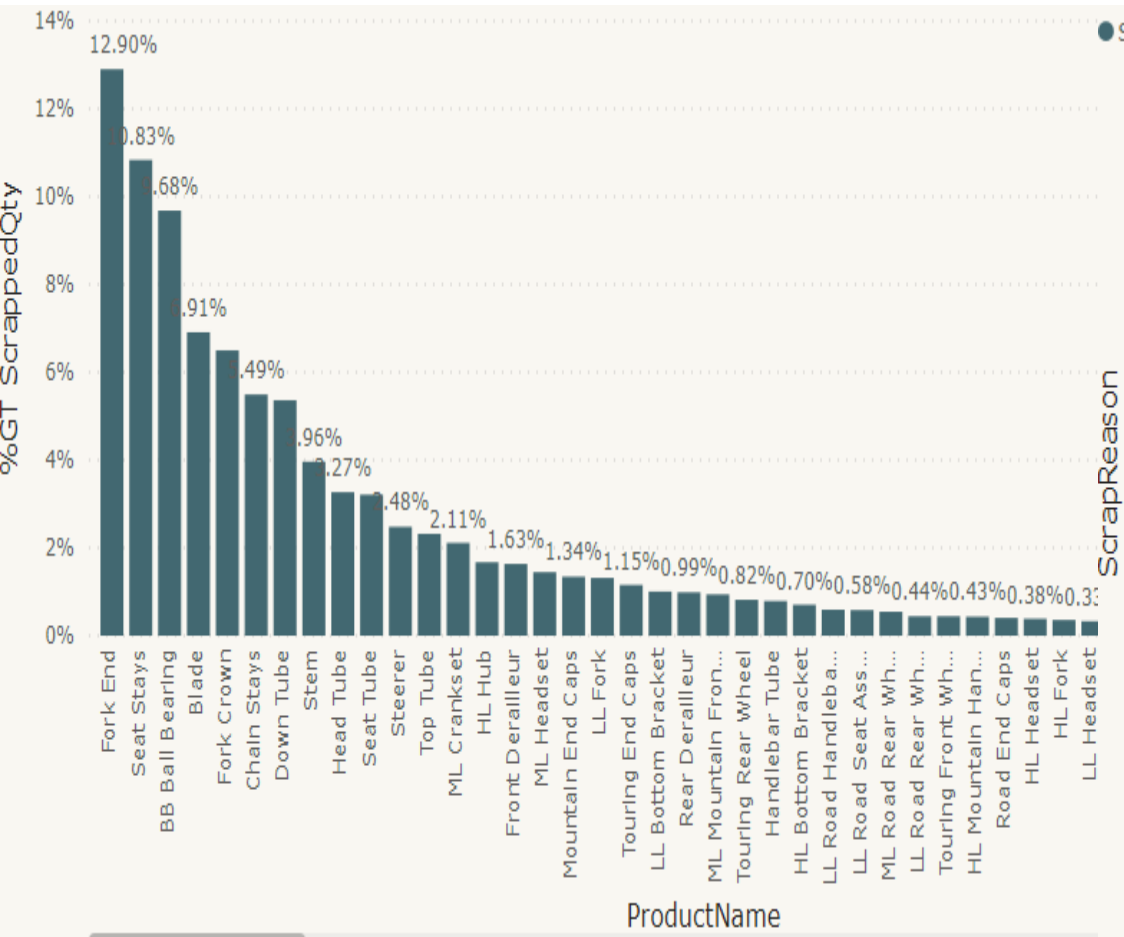
Manufacturing

10651 product failed inspection out of these 13% of product named fork end were scrapped due to the fact that 'paint process failed' during inspection and it represent an average of 34.35 for all scrap reason. The next product is seat stays represent 8% of all products that were scrapped.

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Bike-Sharing Clicks Into a Higher Gear
Estimated number of bike-sharing programs in operation worldwide

Global fleet of public-use bicycles
950,000 2,300,000 18,200,000
2014 2016 2018*

17 24 68 131 230 347 457 549 703 855 1,005 1,188 1,400 1,608
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018*

* as of May
Source: MetroBike's Bike-Sharing Blog

statista
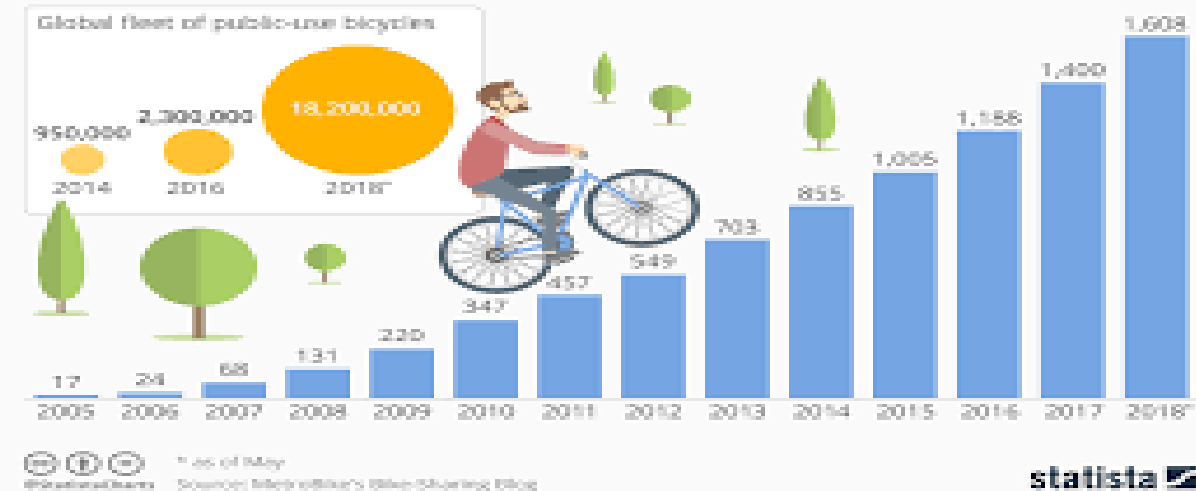
Main Competitors by Regions

Bike Depot (Canada)

Bicycle Warehouse (US)

Bicycles Online (Australia)

Wiggle (UK)

Bike-discount (Germany)

Alltricks (France)

BIKE-DI

Alltri

AHG

Haliford UK

- Mountain Bike ■ RoadBike

AHG UK

- Mountain Bike ■ RoadBike
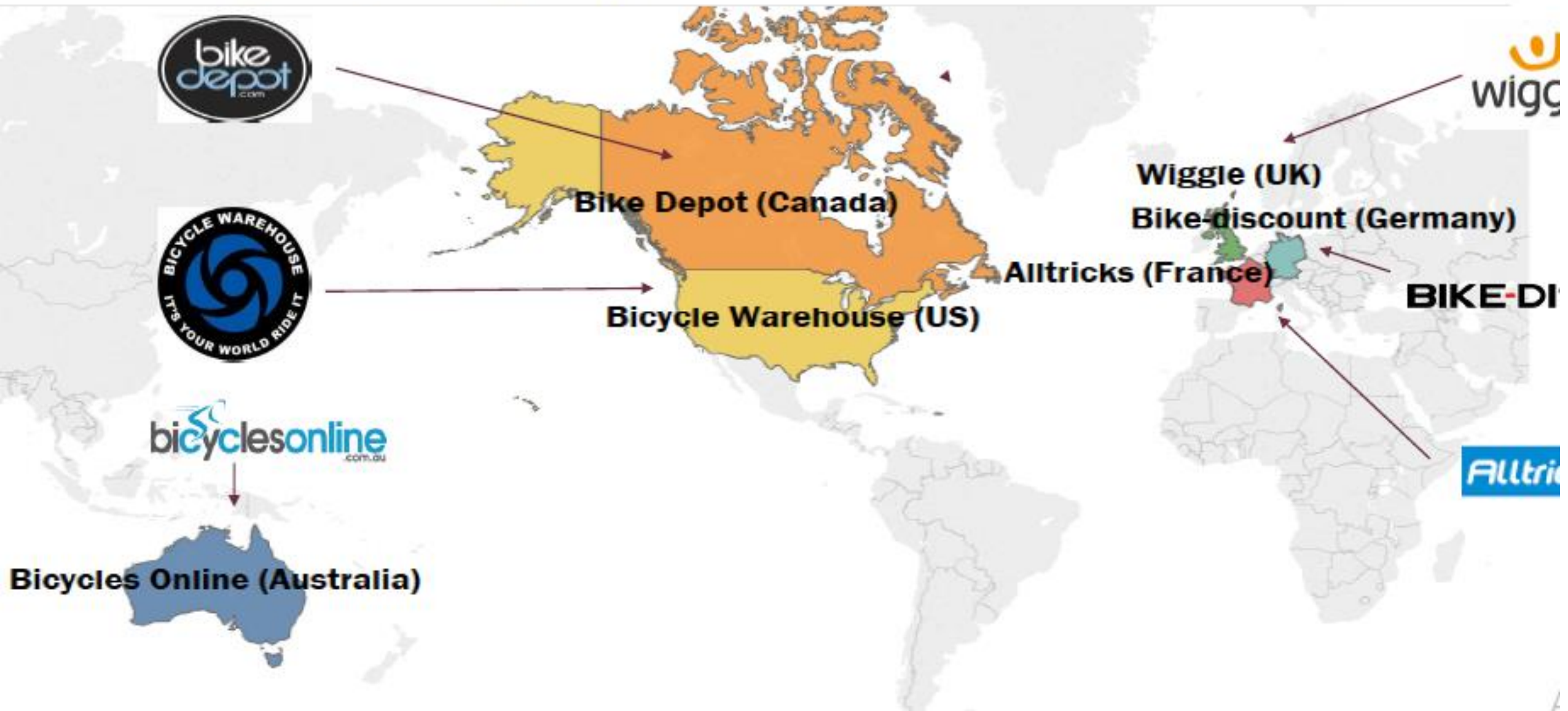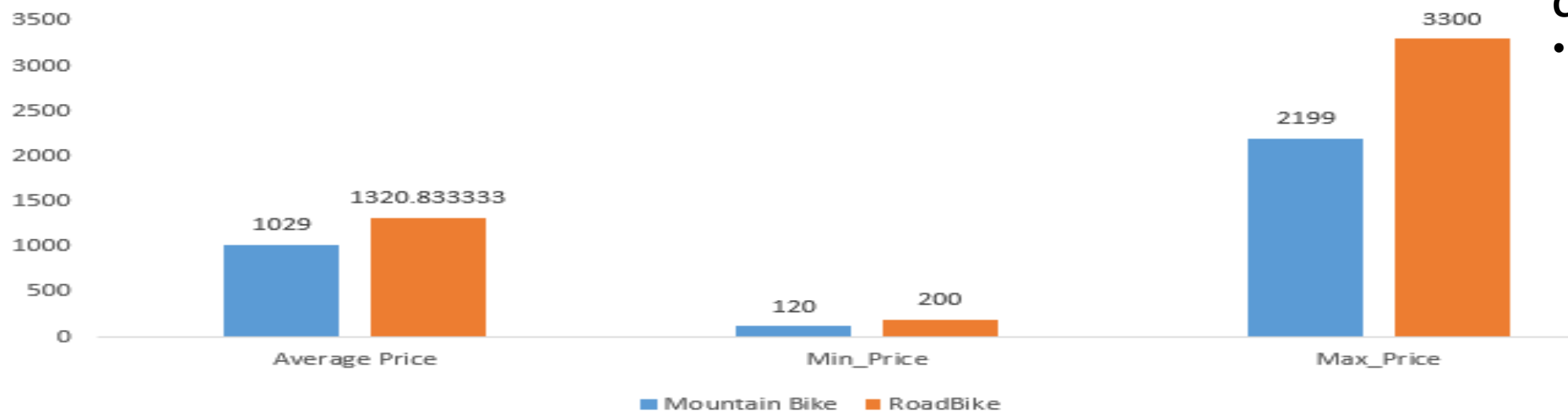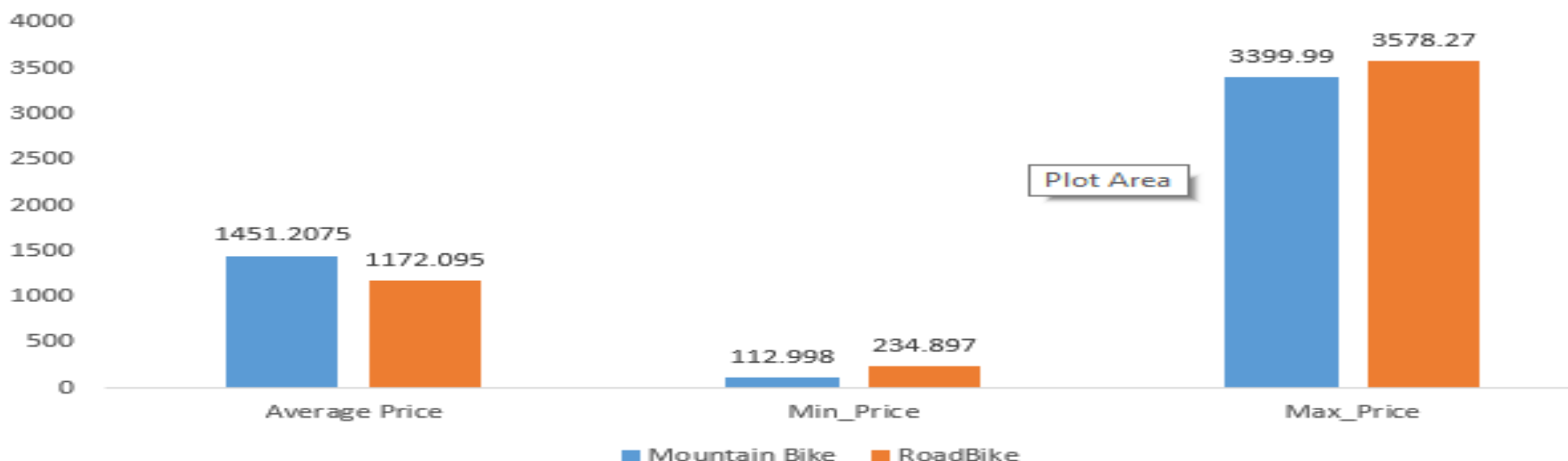
Comments
- AHG's prices are reasonably competitive apart from maximum prices of MTB and Road Bikes which is slightly higher than maximum of Haliford UK

AHG

Competitors by Remarkable Features - AHG does not have

Remarkable Features	Alltricks (France)	Warehouse (US)	Online (Australia)	Bike Depot (Canada)	discount (Germany)	Wiggle (UK)
Additional Products(Shoes / Nu..				■		■
Best Price			■		■	
Blog				■		
Easy Returns	▪				■	■
Free 14 Day Test			■			
Free Shipping		▪	■	■	■	
Full Waranty	▪					
Gift Voucher			■			■
Internatonal Delivery	▪					■
Live Chat		▪				■
Loyalty offers						■
National Servicing			■			■
Price Match						■
Products Review					■	
Professional Bike Fitting				■		
Real Time Stock	▪					
Smart Trainers						■
Strong initial offers		▪				■
System Services		▪		■		■
TRustPilot						■

Comments
Considering the remarkable features that are not available in AHG.
Wiggles UK has the best features, it has remarkable customer experience
Above all, the Smart Trainers option is a way to have an online trainer that keeps a detailed track of the evolution of the client and recommends certain products for them.

Bike Category by company

Company	Mountain Bikes	Road Bikes	Touring Bikes	BMX	Kids Bikes	Path & Pavement	City Bike	E-Bike	Track Bikes	Others
AHG (Global)	■	■	■							
Alltricks (France)	■	■		■			■			■
Bicycle Warehouse (US)	■	■		■	■	■		■		
Bicycles Online (Australia)	■	■		■	■	■		■		■
Bike Depot (Canada)	■	■		■	■			■		■
Bike-discount (Germany)	■	■		■				■	■	■
Wiggle (UK)	■	■	■	■	■			■	■	■

A study by PMR on the **bicycle market** concludes that, the market is anticipated to reach a valuation of around US$ 109 Billions by the end of 2030, expanding at a Compound Annual Growth Rate(CAGR) of nearly 6% over the forecast years (2020-2030)

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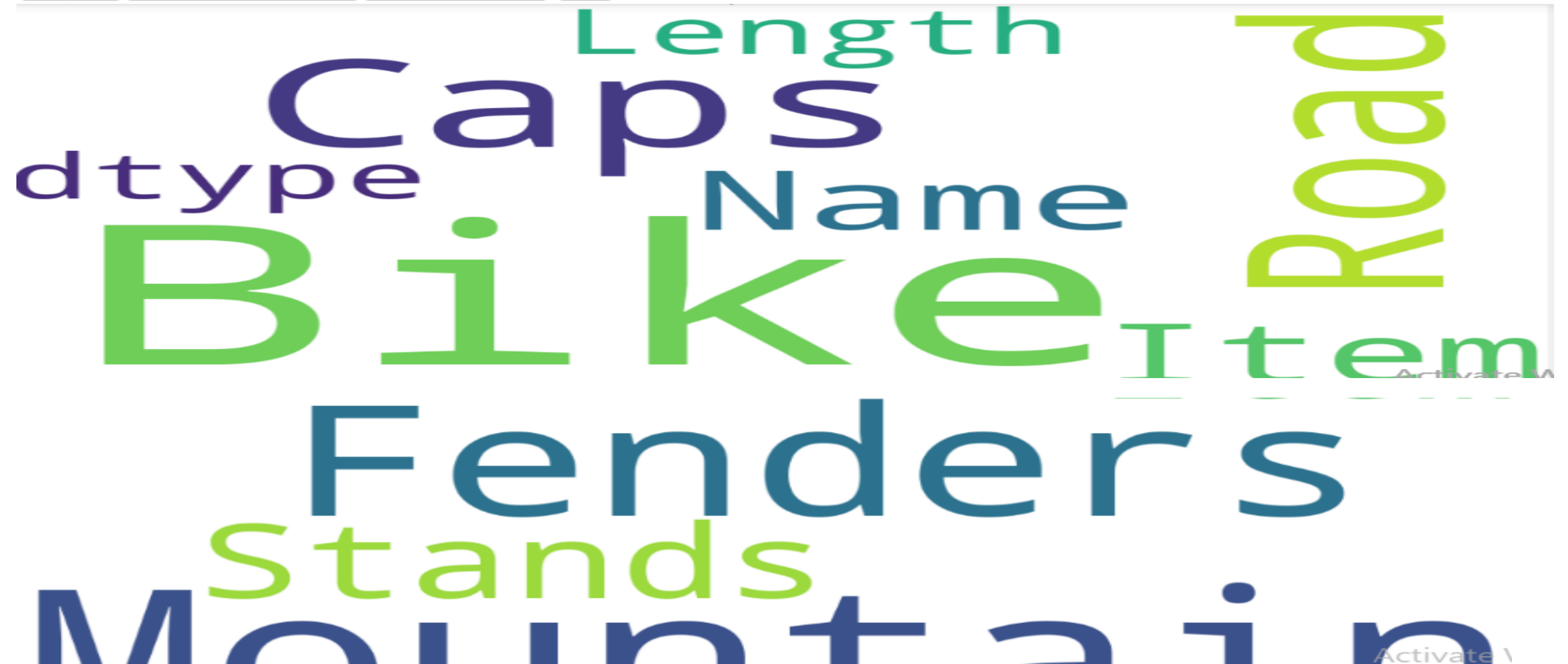
Market Basket Analysis

Most popular item

How Frequent are the items?
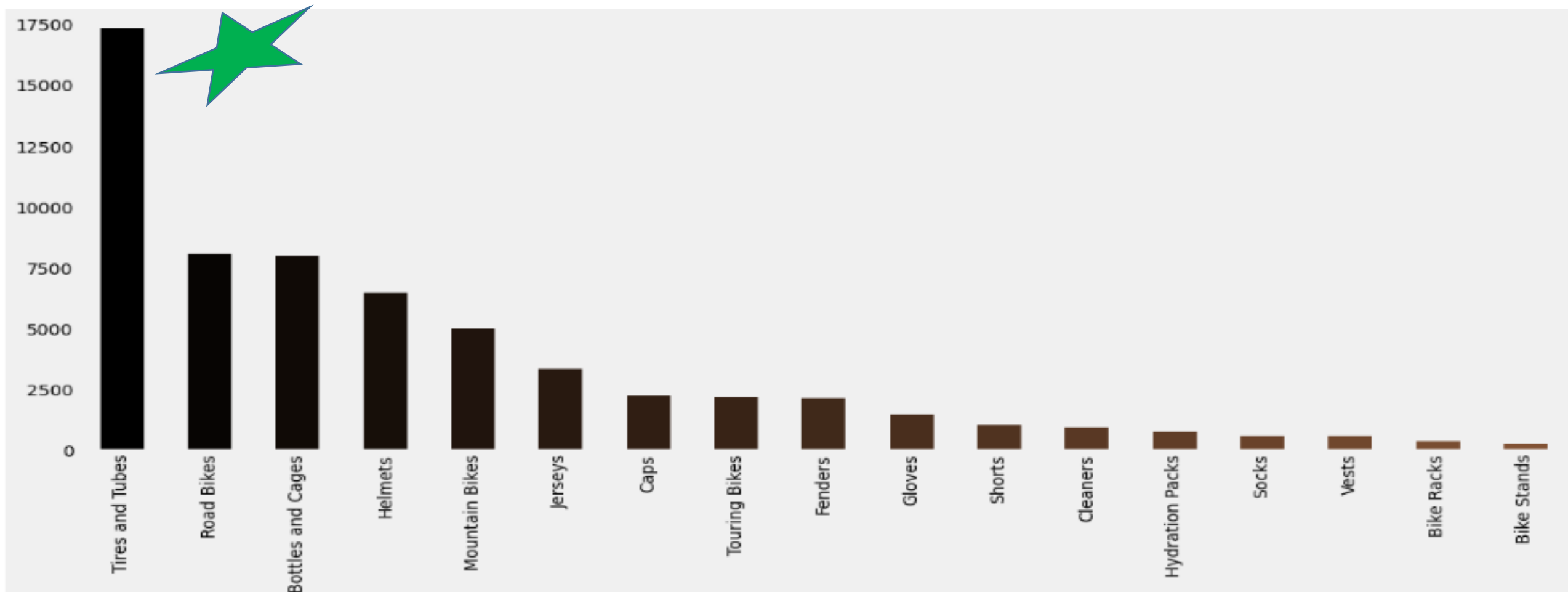
Tires and Tubes appear as the most purchased items in our dataset occurring about in about **17500 times.**

Market Basket Analysis

AHG

Mathematical Background Knowledge of MBA

Let X and Y be sets and assume: X ➡ Y(if you buy x, then you will also buy y)

Support :
Sup(X,Y)= P(X,Y)
Count of X and Y together/Total Transaction

Confidence:
Conf (X,Y)= P(Y|X)=P(X,Y)/P(X)

Lift: =
support/sup(X) x Sup(Y)

Market Basket Analysis

Value count of items in our data set

Items	Frequency
Tires and Tubes	17332
Road Bikes	8068
Bottles and Cages	7981
Helmets	6440
Mountain Bikes	4970
Jerseys	3332
Caps	2190
Touring Bikes	2167
Fenders	2121
Gloves	1430
Shorts	1019
Cleaners	908
Hydration Packs	733
Socks	568
Vests	562
Bike Racks	328
Bike Stands	249

Market basket Analysis

AHG

antecedents	consequents	antecedent support	consequent support	support	confidence	lift
(Helmets)	(Tires and Tubes)	0.232836	0.356737	0.100004	0.429503	1.203976
(Tires and Tubes)	(Helmets)	0.356737	0.232836	0.100004	0.280328	1.203976
(Bottles and Cages)	(Helmets)	0.172385	0.232836	0.043422	0.251888	1.081826
(Helmets)	(Bottles and Cages)	0.232836	0.172385	0.043422	0.186491	1.081826

Antecedent represent the first Item a buyer put in his basket and **Consequent** is the second Item the buyer buys as result buying the first Item. Note that this is not causality but just correlation that a buyer who buys Helmets also buys tires and tubes. Helmets and Tires and Tubes appear together in 10% of our transactions and we are 43% confident that buyer who buys Helmets also buys Tires and tube

Market basket Analysis

Count &Revenue of Items without Market Basket analysis
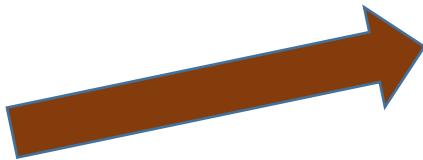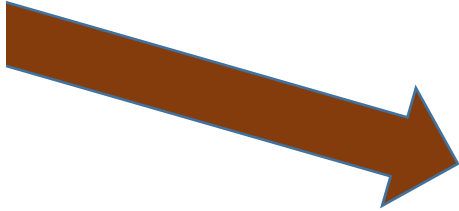
Item	TransactionCount	Avg_Unitprice	Revenue
Helmets	6440	34.9900	225335.60
Tires and Tubes	17332	14.1662	245529.32

Helmets and tire and tubes that are the most frequent items in our market basket analysis appear **6,400** and **17,332** times respectively in our original data sets before the MBA

5

Market basket Analysis

Road Bikes
Helmets

Tires and Tubes
Helmets

Helmets
Bottles and Cages

Mountain Bikes
Bottles and Cages
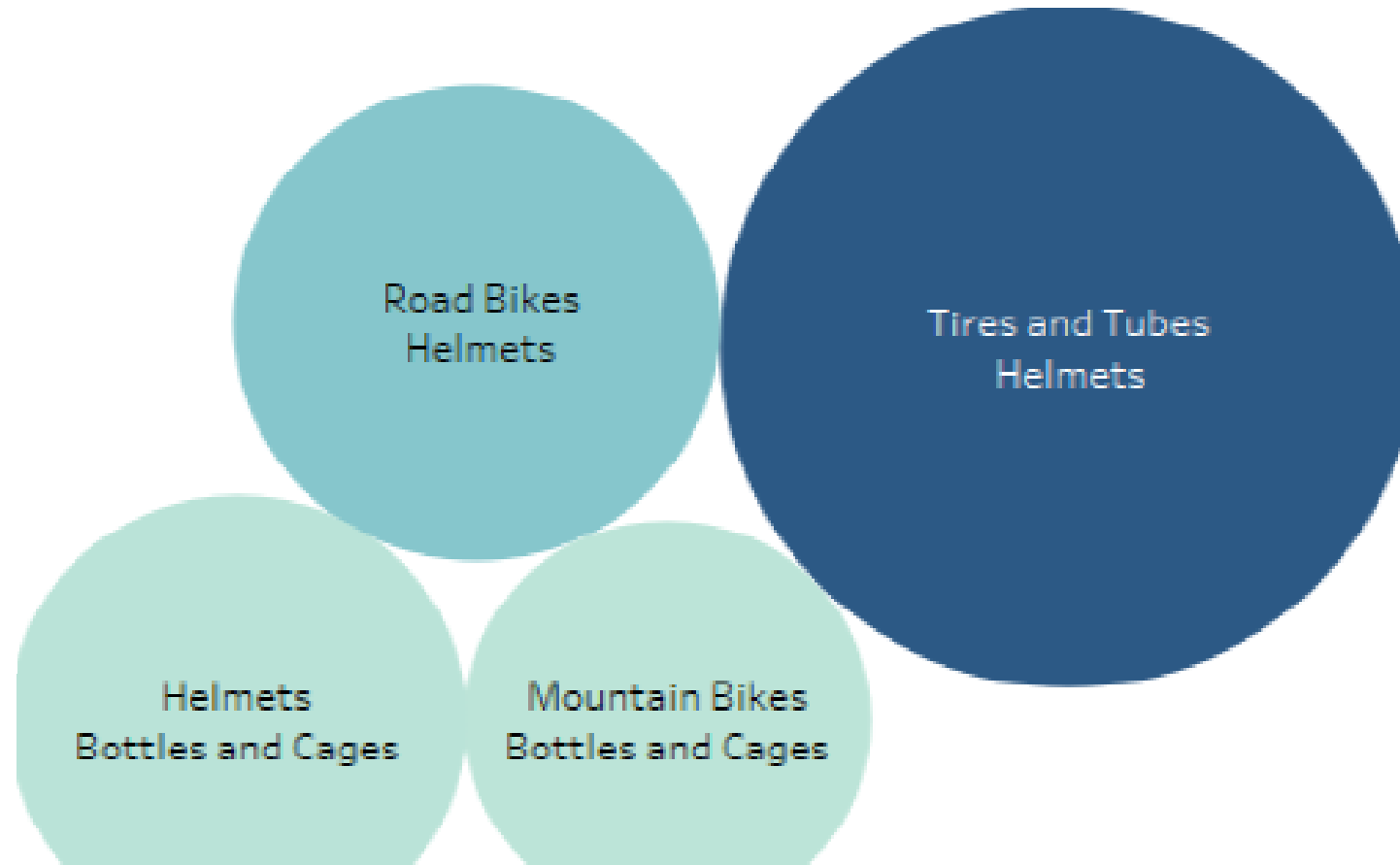
Helmets and tire and tubes are the most frequent items in our basket. This is determined by the size of the bubble,

Market Basket Analysis

AHG

Economic impact of the market basket analysis

Support :
Sup(X,Y)= P(X,Y)
Freq(X,Y)/N ,Support = 0.1 , N = 27659 Freq(X,Y)= 0.1 x 27659 = 2765.9

Revenue without market basket analysis

Item X	unitPrice_Avg	Freq(X)	Revenue($)
Helmet	34.99	6440	225,336

Extra Revenue with market basket analysis

Item Y	unitPrice_Avg	Freq(X,Y)	Additional Revenue($)	Total Revenue with MBA($)
Tire & Tube	14.16	2765.9	39,179	**264,515**

The revenue has increased from **$225,336** to **$264,515**, an increment of **$39,179 (17.4%)** due to MBA as oppose to only when helmet is bought.

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6 **Five years sales forecasting**

Australia
ONLINE

5 year Forecast for Australia Region

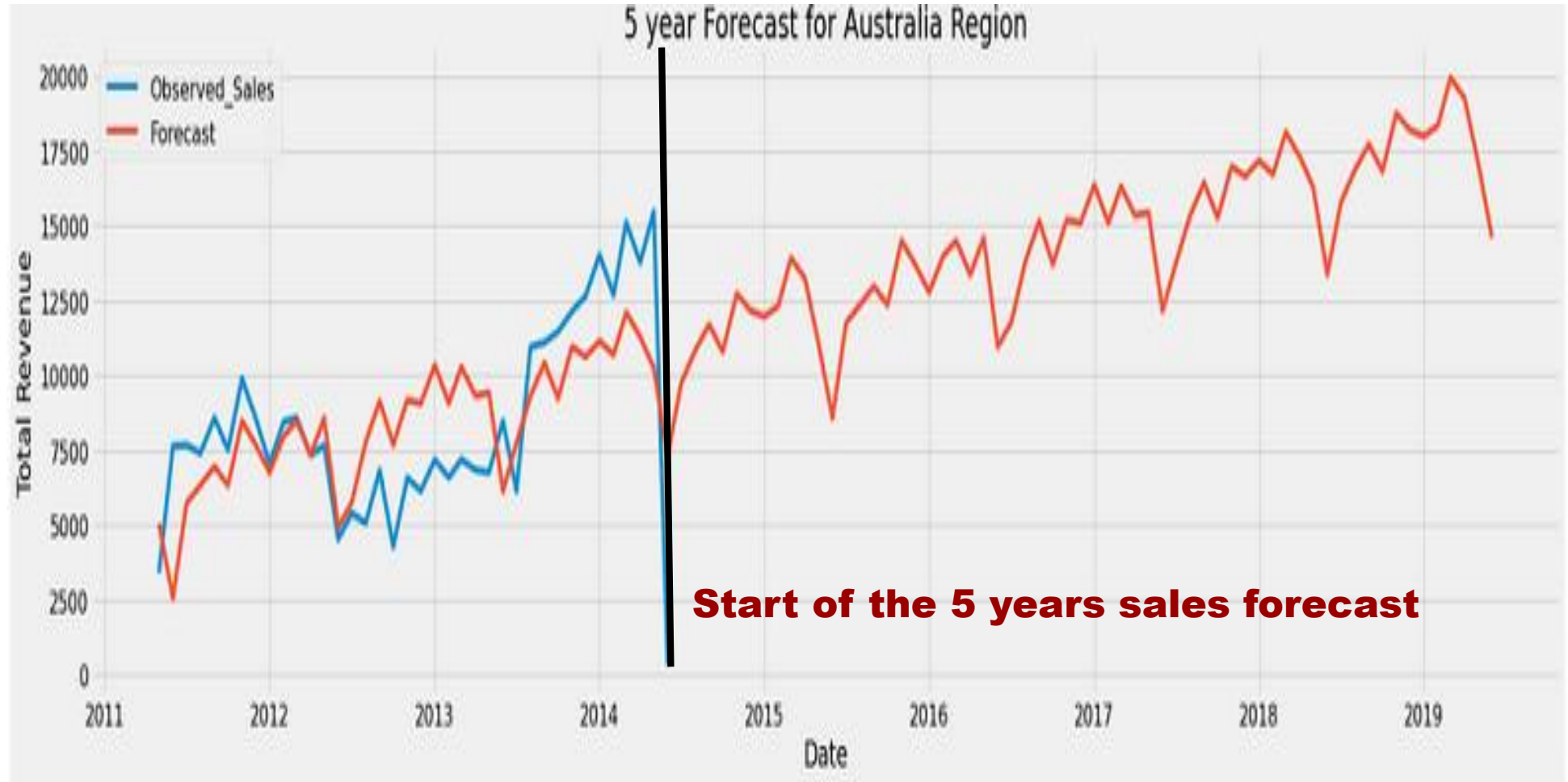**Start of the 5 years sales forecast**
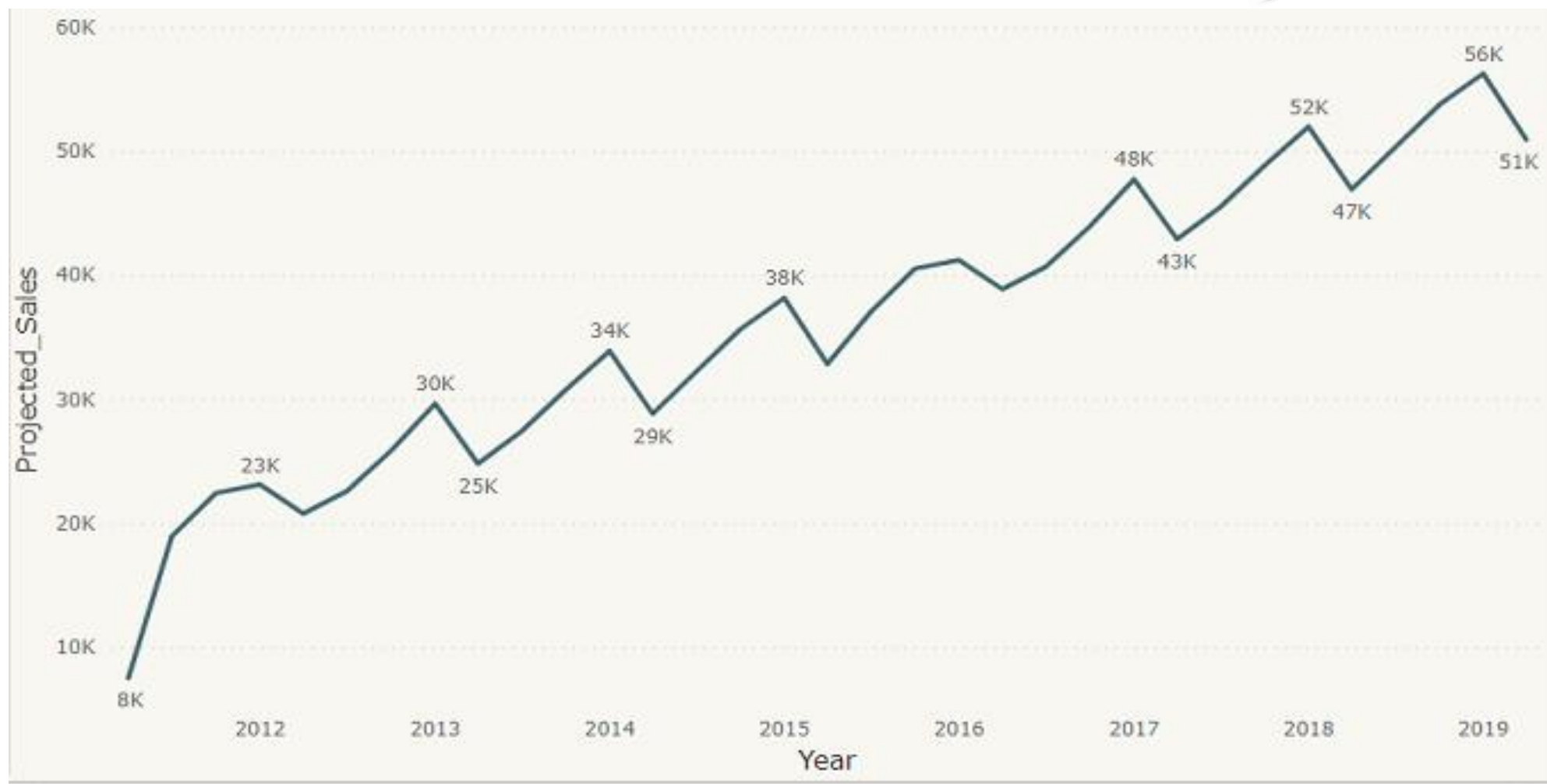
From 2011 to 2014,the forecasted data fit well with the observed data which shows the accuracy of our Prediction.in the second quarter of 2014 the there was no data to observed and our model picked it from there and made forecast up until 2019 which represent 5 year sales forecast

Five years online channel sales forecasting
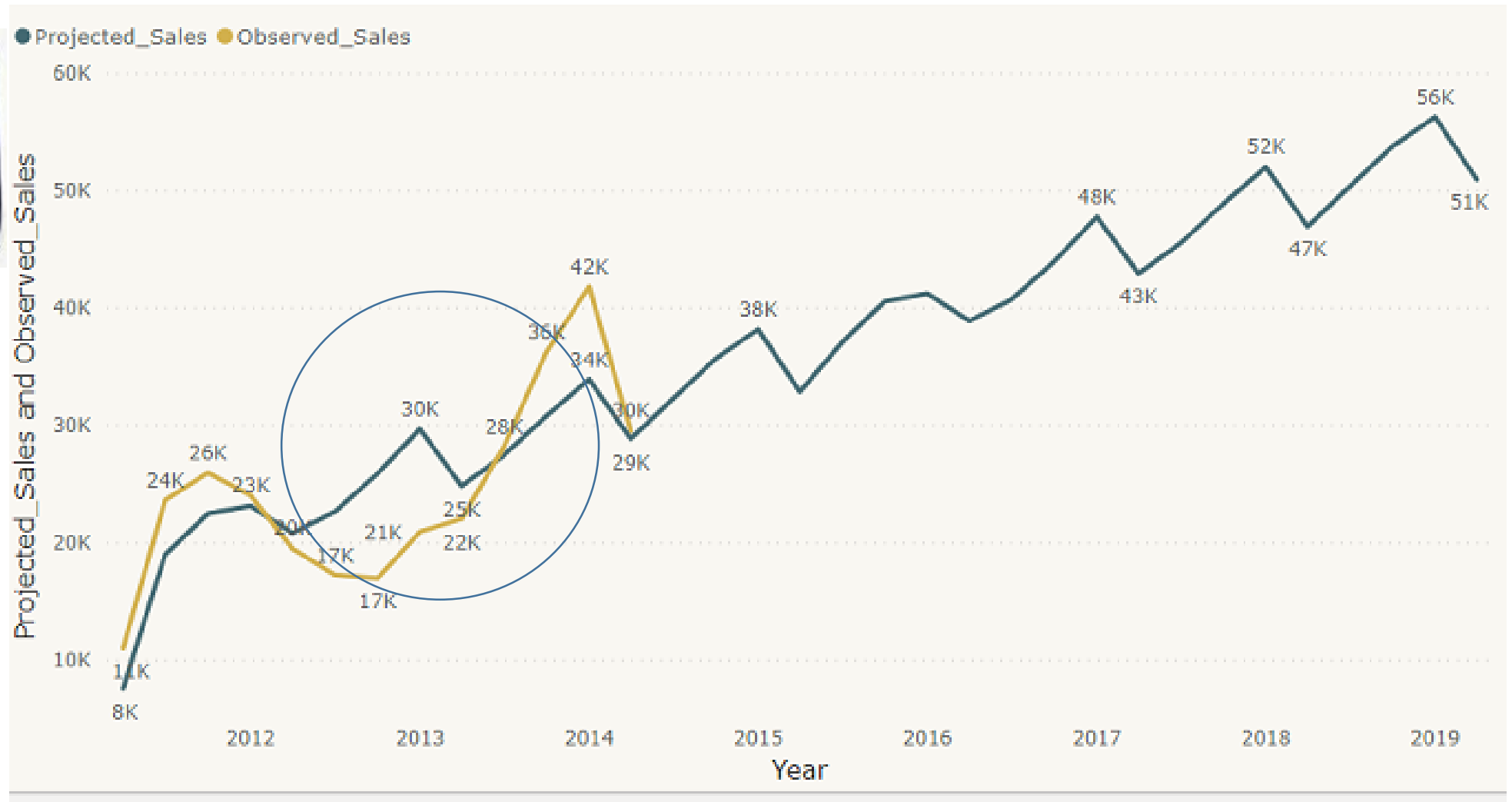
AHG

**Australia
ONLINE**

In the first quarter of 2019 , the sales is projected to rise to $56K

Five years online channel sales forecasting

**Australia
ONLINE**

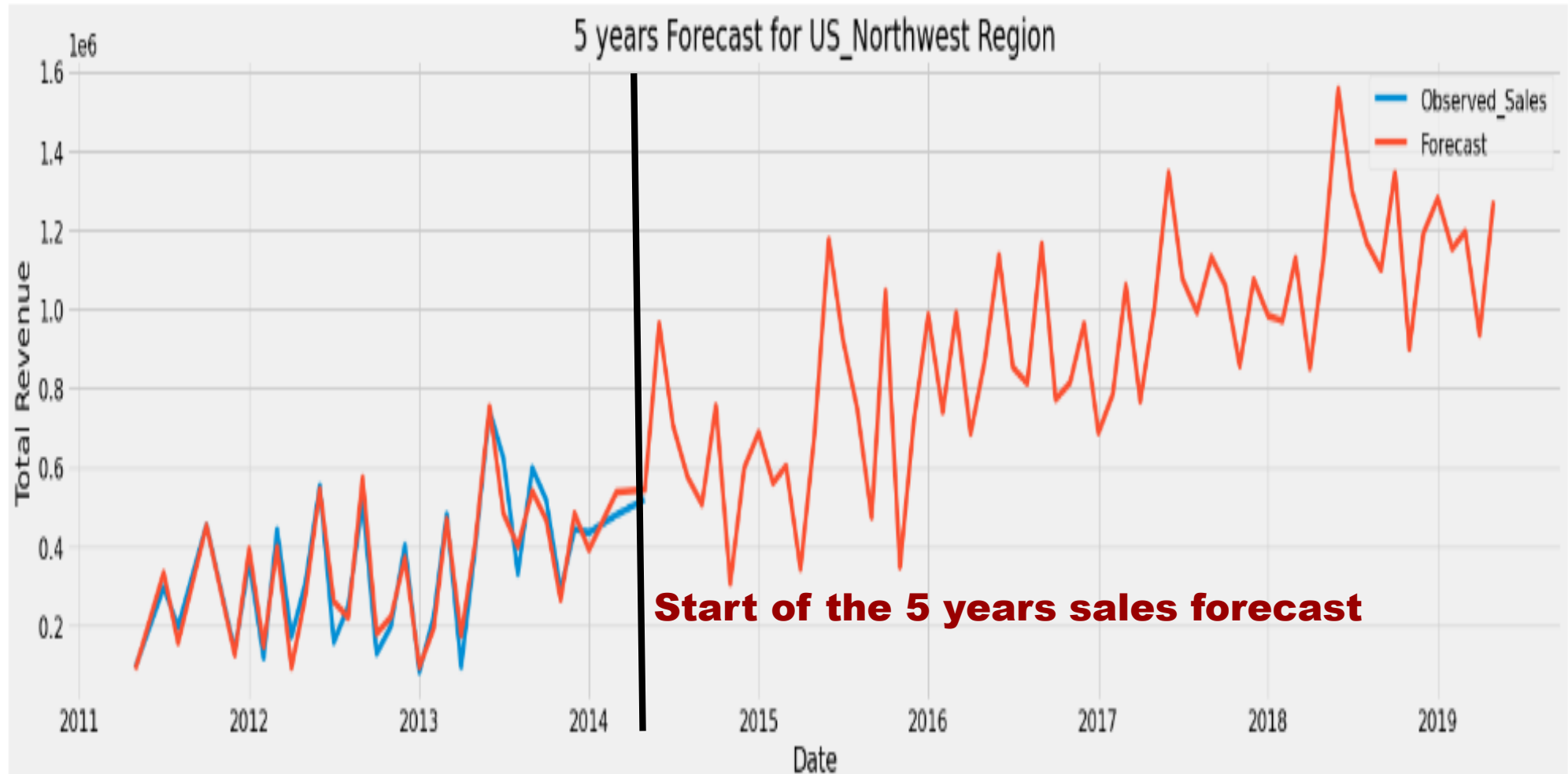

From first quarter of 2013 , the projected sales continue to rise until it reached its peak in the first quarter of 2019 at **$56K** an increment of **86% YOY** over the observed sales.

Five years sales forecasting

AHG

US Northwest RESELLER

5 years Forecast for US_Northwest Region

Start of the 5 years sales forecast

From 2011 to 2014,the forecasted data fit well with the observed data which shows the accuracy of our Prediction.in the second quarter of 2014 the there was no data to observed and our model further made prediction up until 2019 which represent 5 year sales forecast

Five years sales forecasting

US Northwest RESELLER
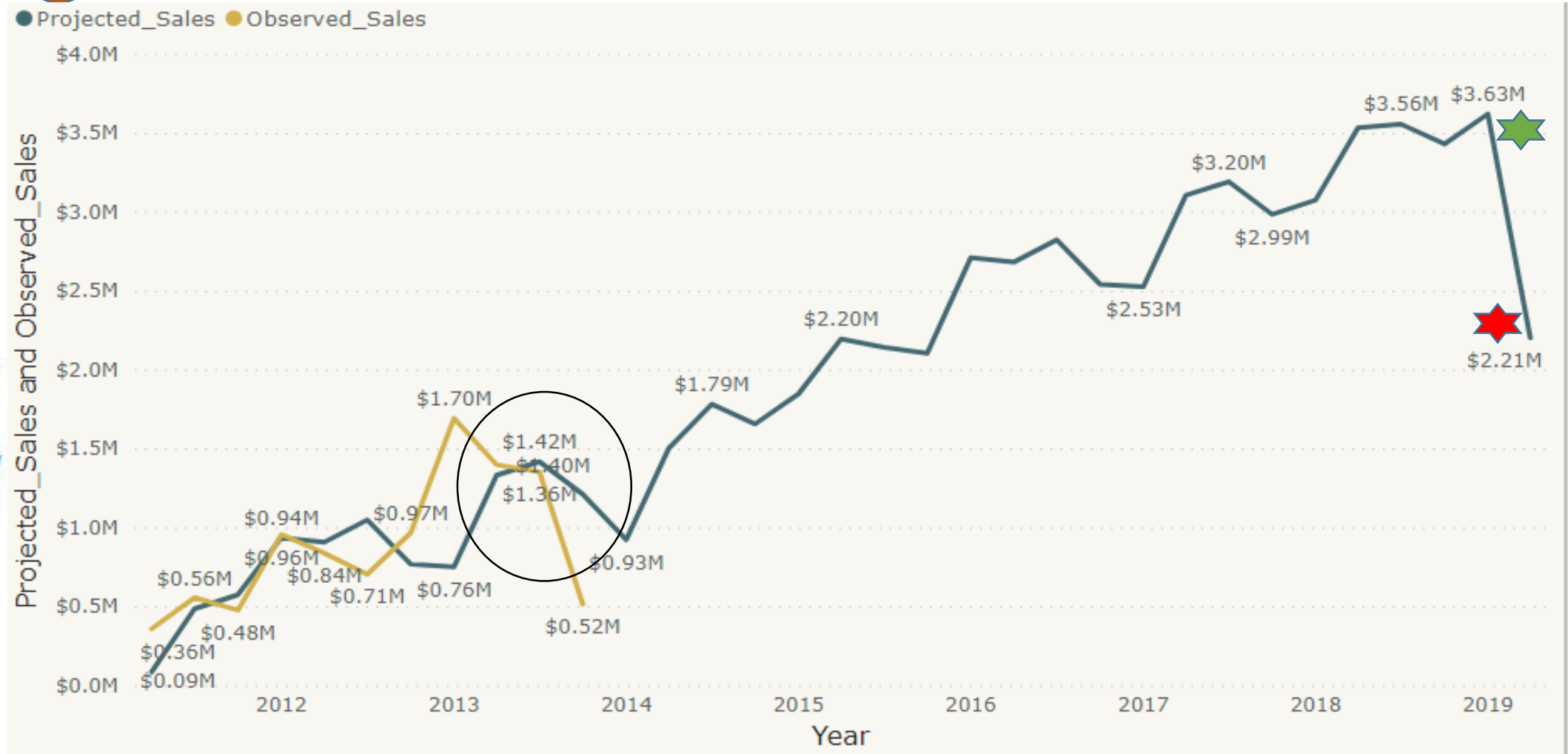
The highest sales for "US NW"($1.4M) was in the third quarter of the year 2013,the projected sales continues to make upward trend until it reached its peak ($3.6M) in the first quarter of 2019,which represent 267% growth in revenue since 2013,but there is a decline of 61% percent in revenue in the second quarter of 2019.

AHG

New remarkable online features in order to offer greater services as well as customer satisfaction. As the most relevant I would recommend; Loyalty offers, Strong Initial offers, customer product review and rating on Trust Pilot, International Delivery, Professional Bike Fitting, etc.

- Should show strong commitment to the E-Bike Market. Future revolution.
- Introduce into the market new products that have a high penetration. Shoes, Nutrition

Establish volume discount contracts for resellers motivating the increase in sales. These discounts can not exceed the minimum profitability established at the AHG level.

Should consider establishing automatic procedures with a new pricing policy that prevents sales with negative margins.

Penetrate into new regions in Asia such as India,Pakstian, China,etc and cities which are densely populated in Africa, Lagos in Nigeria, Cairo in Egypt etc.

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Recommendation

AHG

- Open new online market in Northeast, Southeast and Central in US. Considering the average of online sales for the year 2013 which would be 10% per region, this strategy could increase sales by 3.2M$ and the profit by $1.3M every year.
- AHG should maintain the Reseller Market in all the regions as soon as the new price policy in Reseller is established that negative margins are prevented. If AHG would have sold with a low margin of 5% over the standard cost in the Reseller market (Road & Touring Bike) during these years, it would have obtained a profit of $3M instead of a loss of –$3.7M.
- The minimum Price is higher than the average in MTB and Road then we should recommend a decrease of the minimum price in order to penetrate the low cost market and its accessory products.
- AHG should introduce online "Components Category" therefore Cross selling could be increase.
- AHG should recommend Tire and Tubes to customer who purchase Helmet this could increase revenue by 17%
- Actual Cost = Planned Cost and it has remained unchanged YoY. AHG should review the manufacturing processes for possible Risk of Fraud.

Conclusion

AHG

- There is a clear shift ,a sharp increase in the number of online transactions from the end of May 2013 over the period of 1 year reaching its peak in May 2014 – at about **1,468 %** increase

- The data also reveals that while Reseller Sales have provided overall greater revenue form 2011 to 2014, Online Sales surpassed Reseller Sales for the first time in the 1Q 2014.

- The Bikes Market Reseller represents 61% of Sales nevertheless it has a negative profit of $2.7 million. The reason for these losses is explained by sales of Road Bikes and Touring Bikes whose costs have been higher than sales.

- Average Sales and costs per sale have decreased significantly each year from average sales of $ 2,212 in 2011 to $ 537 in 2014 (Average Cost: 1,927$ in 2011 to 445$ in 2014).

- New customers were also attained in 2012, 2013 and 2014 (penetration +111%, +195% and 65%, respectively). (Note: 2014 is an extrapolation of the data).

- The Southeast US, Northeast US and Central US market has very slow reseller growth and despicable online Sales. AHG should focus in a Welcome promotion or Loyalty offers.

- According to the analysis of the market basket, the products that must be sold together based on strong profitability is: Online –Helmets with Tire & Tubes..

- Shipping Cost is very high with some companies compared to others. A price policy must be established by centralizing the transportation companies with which AHG works.

- Most of finished bikes inventory are below the safety stock level.